



Part I: Project Information

Name of Parent Program

GEF-7 Africa Minigrids Program

GEF ID

10831

Project Type

MSP

Type of Trust Fund

GET

CBIT/NGI

CBIT No

NGI No

Project Title

Benin National Child Project under the GEF Africa Minigrids Program

Countries

Benin

Agency(ies)

UNDP

Other Executing Partner(s)

Ministry of Energy

Executing Partner Type

Government

GEF Focal Area

Climate Change

Sector

Renewable Energy

Taxonomy

Focal Areas, Climate Change, Climate Change Mitigation, Technology Transfer, Financing, Renewable Energy, Energy Efficiency, Influencing models, Demonstrate innovative approach, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Deploy innovative financial instruments, Stakeholders, Communications, Education, Behavior change, Awareness Raising, Private Sector, Large corporations, Individuals/Entrepreneurs, Capital providers, Financial intermediaries and market facilitators, SMEs, Beneficiaries, Type of Engagement, Participation, Partnership, Consultation, Information Dissemination, Civil Society, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Sex-disaggregated indicators, Women groups, Gender results areas, Access to benefits and services, Capacity Development, Participation and leadership, Knowledge Generation and Exchange, Capacity, Knowledge and Research, Enabling Activities, Knowledge Generation

Rio Markers**Climate Change Mitigation**

Principal Objective 2

Climate Change Adaptation

No Contribution 0

Biodiversity

No Contribution 0

Land Degradation

No Contribution 0

Submission Date

9/18/2022

Expected Implementation Start

6/1/2023

Expected Completion Date

5/31/2027

Duration

48In Months

Agency Fee(\$)

119,353.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

| Objectives/Programs | Focal Area Outcomes | Trust Fund | GEF Amount(\$) | Co-Fin Amount(\$) |
|-------------------------------|---|-------------------|-----------------------|--------------------------|
| CCM-1-1 | Promote innovation and technology transfer for sustainable energy breakthroughs for decentralized power with energy storage | GET | 1,326,147.00 | 33,200,000.00 |
| Total Project Cost(\$) | | | 1,326,147.00 | 33,200,000.00 |

B. Project description summary

Project Objective

To support access to clean energy by increasing technical and financial feasibility and by promoting scaled-up commercial investment, in low-carbon minigrids in Benin, with a focus on cost-reduction levers and innovative business models.

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|--------------------------|-----------------------|--------------------------|-------------------------|-------------------|----------------------------------|-----------------------------------|
|--------------------------|-----------------------|--------------------------|-------------------------|-------------------|----------------------------------|-----------------------------------|

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|-------------------------|----------------------|---|---|------------|---------------------------|----------------------------|
| 1.Policy and regulation | Technical Assistance | 1 Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon minigrids. | <p>1.1 An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification.</p> <p>1.2 DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial de-risking instruments and contribute to AMP Flagship Report on Cost Reduction.</p> <p>1.3 Capacity building provided to public officials (regulator, ministries) specifically to design procurement/tender processes that incorporate cost-reduction levers and innovative business models.</p> <p>1.4 Domestication of quality standards for solar mini-grid components, and institutional capacity of national standards organizations/bureau strengthened.</p> <p>1.5 Support provided to establish the</p> | GET | 287,000.00 | 5,250,000.00 |

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|--|-----------------------|---|---|-------------------|----------------------------------|-----------------------------------|
| 2. Business model innovation with private sector | Technical Assistance | 2 Innovative business models based on cost reduction operationalized , with strengthened private sector participation in low-carbon/renewable | 2.1 Pilots developed (preparatory phase), including on productive use and innovative appliances and modular hardware and system design, leading to cost-reduction in minigrids. | GET | 45,000.00 | 4,000,000.00 |
| 2. Business model innovation with private sector | Investment | 2 Innovative business models based on cost reduction operationalized , with strengthened private sector participation in low-carbon/renewable energy minigrid development | 2.2. Commissioning and monitoring of selected pilots in alignment with AMP principles. | GET | 425,000.00 | 4,000,000.00 |

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|--|-----------------------|--|--|-------------------|----------------------------------|-----------------------------------|
| 2. Business model innovation with private sector | Technical Assistance | 2 Innovative business models based on cost reduction operationalized, with strengthened private sector participation in low-carbon/renewable energy minigrid development | 2.3. Enhancement of minigrid business model by strengthening operator and community capacities, development of PUE and other energy nexus, and the integration of local RE sources | GET | 100,000.00 | 3,000,000.00 |
| 3. Scaled-up financing | Technical Assistance | 3. Financial sector actors are ready to invest in a pipeline of low-carbon minigrids and concessional financial mechanisms are in place to incentivize scaled-up investment. | 3.1 Innovative financing solutions for minigrid development are identified and implemented with supporting human and institutional strengthening 3.2 Domestic financial sector capacity-building on business and financing models for minigrids | GET | 95,000.00 | 13,000,000.00 |

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|-------------------------------------|----------------------|--|--|------------|---------------------------|----------------------------|
| 4. Digital and Knowledge Management | Technical Assistance | <p>4. Digitalization and data mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefitting from linkages to international good practice.</p> | <p>4.1 A project digital strategy is developed and implemented, including linkages to and following guidance from the AMP Regional Project.</p> <p>4.2 Specification and implementation of Minigrids Digital Platform to track minigrid pilots and support scale-up and cost-reduction. 4.3 Adoption and operationalization of the project's Quality Assurance and Monitoring Framework (QAMF).</p> <p>4.4 Engage with regional project by participating in Communities of Practice and capturing and sharing of lessons learnt.</p> | GET | 189,000.00 | 700,000.00 |

| Project Component | Financing Type | Expected Outcomes | Expected Outputs | Trust Fund | GEF Project Financing(\$) | Confirmed Co-Financing(\$) |
|----------------------------|----------------------|---|---|------------|---------------------------|----------------------------|
| 5. Monitoring & Evaluation | Technical Assistance | 5. Ensuring compliance with all mandatory monitoring and reporting requirements of the GEF. | 5.1 Inception workshop is conducted and M&E plan is implemented. 5.2 Project Mid-Term Review is conducted. 5.3 GEF Terminal Evaluation is conducted | GET | 64,588.00 | 200,000.00 |

| | | |
|-----------------------|---------------------|----------------------|
| Sub Total (\$) | 1,205,588.00 | 30,150,000.00 |
|-----------------------|---------------------|----------------------|

Project Management Cost (PMC)

| | | |
|-------------------------------|---------------------|----------------------|
| GET | 120,559.00 | 3,050,000.00 |
| Sub Total(\$) | 120,559.00 | 3,050,000.00 |
| Total Project Cost(\$) | 1,326,147.00 | 33,200,000.00 |

Please provide justification

C. Sources of Co-financing for the Project by name and by type

| Sources of Co-financing | Name of Co-financier | Type of Co-financing | Investment Mobilized | Amount(\$) |
|--------------------------------|---|-----------------------------|-----------------------------|----------------------|
| Donor Agency | African Development Bank (AfDB) | Loans | Investment mobilized | 12,000,000.00 |
| GEF Agency | United Nations Development Programme (UNDP) | Grant | Recurrent expenditures | 200,000.00 |
| Recipient Country Government | Ministry of Energy (ME) | Public Investment | Recurrent expenditures | 21,000,000.00 |
| Total Co-Financing(\$) | | | | 33,200,000.00 |

Describe how any "Investment Mobilized" was identified

AfDB's Rural Electrification project, in the form of a loan, runs from 2019 to 2023 (inclusively) for a total of USD 66.5 m, as per co-financing letter provided by AfDB. The USD 12 m portion ascribed to this project is proportionate to the remaining investment foreseen over the duration of the AMP project.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

| Agency | Trust Fund | Country | Focal Area | Programming of Funds | Amount(\$) | Fee(\$) | Total(\$) |
|----------------------------------|-------------------|----------------|-------------------|-----------------------------|---------------------|-------------------|---------------------|
| UNDP | GET | Benin | Climate Change | CC STAR Allocation | 1,326,147 | 119,353 | 1,445,500.00 |
| Total Grant Resources(\$) | | | | | 1,326,147.00 | 119,353.00 | 1,445,500.00 |

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

50,000

PPG Agency Fee (\$)

4,500

| Agency | Trust Fund | Country | Focal Area | Programmin g of Funds | Amount(\$) | Fee(\$) | Total(\$) |
|--------------------------------|-------------------|----------------|-------------------|----------------------------------|-------------------|-----------------|------------------|
| UNDP | GET | Benin | Climate Change | CC STAR Allocation | 50,000 | 4,500 | 54,500.00 |
| Total Project Costs(\$) | | | | | 50,000.00 | 4,500.00 | 54,500.00 |

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

| Total Target Benefit | (At PIF) | (At CEO Endorsement) | (Achieved at MTR) | (Achieved at TE) |
|--|----------|----------------------|-------------------|------------------|
| Expected metric tons of CO ₂ e (direct) | 0 | 9056 | 0 | 0 |
| Expected metric tons of CO ₂ e (indirect) | 0 | 179273 | 0 | 0 |

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

| Total Target Benefit | (At PIF) | (At CEO Endorsement) | (Achieved at MTR) | (Achieved at TE) |
|--|----------|----------------------|-------------------|------------------|
| Expected metric tons of CO ₂ e (direct) | | | | |
| Expected metric tons of CO ₂ e (indirect) | | | | |
| Anticipated start year of accounting | | | | |
| Duration of accounting | | | | |

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

| Total Target Benefit | (At PIF) | (At CEO Endorsement) | (Achieved at MTR) | (Achieved at TE) |
|--|----------|----------------------|-------------------|------------------|
| Expected metric tons of CO ₂ e (direct) | | 9,056 | | |
| Expected metric tons of CO ₂ e (indirect) | | 179,273 | | |
| Anticipated start year of accounting | | 2025 | | |
| Duration of accounting | | 20 | | |

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

| Total Target Benefit | Energy (MJ) (At PIF) | Energy (MJ) (At CEO Endorsement) | Energy (MJ) (Achieved at MTR) | Energy (MJ) (Achieved at TE) |
|--------------------------|----------------------|----------------------------------|-------------------------------|------------------------------|
| Target Energy Saved (MJ) | | | | |

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

| Technology | Capacity (MW) (Expected at PIF) | Capacity (MW) (Expected at CEO Endorsement) | Capacity (MW) (Achieved at MTR) | Capacity (MW) (Achieved at TE) |
|--------------------|--|--|--|---------------------------------------|
| Solar Photovoltaic | | 0.37 | | |
| Energy Storage | | 0.89 | | |

Indicator 11 People benefiting from GEF-financed investments

| | Number (Expected at PIF) | Number (Expected at CEO Endorsement) | Number (Achieved at MTR) | Number (Achieved at TE) |
|---------------|---------------------------------|---|---------------------------------|--------------------------------|
| Female | | 6,076 | | |
| Male | | 6,076 | | |
| Total | 0 | 12152 | 0 | 0 |

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

1. Work carried out during the PPG phase was aimed at complementing information and validating the assumptions underlying the Project Identification Form (PIF), as well as engagement with project counterparts. PPG work started in February 2022 and extended to September 2022 due to some delays related to COVID-19 travel limitations and safety measures. A number of workshops and meetings in Benin, together with field visits, informed this document.

2. The PPG faced initial challenges to align the Benin child project with the AMP umbrella program, given a preference from government for rehabilitating minigrids and on-grid work, but this was resolved and the resulting project makes room for activities contributing to several objectives.

3. The PPG contributed to building acknowledgement of the relevance of the AMP for Benin and better understand the specific circumstances and opportunities. The operation of minigrids based on sound business principles and renewable energy sources, as pursued by the AMP, is expected to deliver valuable experiences for Benin and support a new paradigm for the electricity sector in the country in terms of decentralized, low-carbon power generation, service quality, and cost level.

4. The table hereunder presents the changes between PIF and CEO Endorsement Request (CEO ER) at output level.

| Changes in Project's Results Framework between PIF and CEO ER | | | |
|---|---|---|---------------------------------|
| Components | Outputs - location at PIF stage | Outputs - location at CEO Endorsement | Comments / Rational for changes |
| 1. Policy and regulation | 1.1 An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification | 1.1 An inclusive national dialogue to identify minigrid delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification | As in PIF |
| | 1.2 Minigrid DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial derisking instruments and contribute to AMP Flagship Report on Cost Reduction. | 1.2 Minigrid DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial derisking instruments and contribute to AMP Flagship Report on Cost Reduction. | As in PIF |

| Changes in Project's Results Framework between PIF and CEO ER | | | |
|---|---|---|---|
| Components | Outputs - location at PIF stage | Outputs - location at CEO Endorsement | Comments / Rational for changes |
| | 1.3 Capacity building provided to public officials (regulator, ministries) specifically to design procurement/tender processes that incorporate cost-reduction levers and innovative business models. | 1.3 Capacity building provided to public officials (regulator, ministries) specifically to design procurement/tender processes that incorporate cost-reduction levers and innovative business models. | As in PIF. |
| | (none) | 1.4 Domestication of quality standards for solar minigrid components, and institutional capacity of national standards organizations/bureau strengthened | Given apparent technical flaws in earlier projects, developing and/or enforcing technical standards (?Quality Assurance?) would contribute strong to the objectives. The Electricity Law of 2020 also refers to technical standards requirements. |
| | (none) | 1.5 Support provided to establish the environmental and social policies and plans to ensure mini-grid risks are properly handled. | Output added as standard AMP Output |
| 2. Business model innovation with Private Sector | 2.1 Pilots developed, including on productive use and innovative appliances and modular hardware and system design, leading to cost-reduction in minigrids.[OW1] [JF2] | 2.1 Pilots developed (preparatory phase), including on productive use and innovative appliances and modular hardware and system design, leading to cost-reduction in minigrids. | This output has been split to facilitate tracking of investment in goods and works for MG pilots from GEF budget and cofinanciers. |
| | | 2.2. Commissioning and monitoring of selected pilots in alignment with AMP principles | |
| | 2.2 Capacity of winning tender bidders (private sector developers) strengthened to develop and implement innovative business models and cost-reduction levers | 2.3. Enhancement of minigrid business model by strengthening operator and community capacities, development of PUE and other energy nexus, and the integration of local RE sources. | Original output 2.2 deemed less relevant given presence of strong (foreign) suppliers in the market. New output 2.3 offers a broad package of activities to support integration of MGs into local communities to increase electricity demand and effective utilization thereof for social and economic development. |

| Changes in Project's Results Framework between PIF and CEO ER | | | |
|---|---|--|--|
| Components | Outputs - location at PIF stage | Outputs - location at CEO Endorsement | Comments / Rational for changes |
| | 2.3 Support provided to establish and grow a national industry association for private sector developers | (none) | Output no longer pursued as market is currently dominated by foreign suppliers and financiers. |
| 3. Scaled-up financing | 3.1 Innovative financing solutions for minigrid development are identified and implemented through the MFF (or equivalent) with supporting human and institutional strengthening | 3.1 Innovative financing solutions for minigrid development are identified and implemented through the MFF (or equivalent) with supporting human and institutional strengthening | As in PIF. |
| | 3.2 Domestic financial sector capacity-building on business and financing models for minigrids | 3.2 Domestic financial sector capacity-building on business and financing models for minigrids | As in PIF. |
| 4. Digital and Knowledge Management | 4.1 A project digital strategy is developed and implemented, including linkages to and following guidance from the AMP Regional Project | 4.1 A project digital strategy is developed and implemented, including linkages to and following guidance from the AMP Regional Project. | As in PIF. |
| | | 4.2. Specification and implementation of Minigrids Digital Platform to track minigrid pilots and support scale-up and cost-reduction. | Output added as standard AMP Output |
| | 4.2 A Quality Assurance and Monitoring Framework for measuring, reporting and verification of the sustainable development impacts of all minigrids pilots supported, including GHG emission reductions, is adopted and operationalized based on standardized guidance from the regional project | 4.3 Adoption and operationalization of the project's Quality Assurance and Monitoring Framework (QAMF). | As in PIF, with wording change (simplified) |

| Changes in Project's Results Framework between PIF and CEO ER | | | |
|---|---|--|---|
| Components | Outputs - location at PIF stage | Outputs - location at CEO Endorsement | Comments / Rational for changes |
| | 4.3 Engage with regional project, including, but not limited to, via (i) participating in Communities of Practice and (ii) capturing and sharing lessons learnt. | 4.4 Engage with regional project, including, but not limited to, via (i) participating in Communities of Practice and (ii) capturing and sharing lessons learnt. | As in PIF. |
| 5. Monitoring and evaluation. | 4.4 M&E and Reporting, including (i) Conducting inception workshop and preparing report, (ii) Ongoing M&E, (iii) Mid Term Evaluation and (iv) Terminal Evaluation | 5.1 Inception workshop is conducted and M&E plan is implemented. | Changes respond to format. As per GEF guidance, output 4.4 has been moved to new Component/Outcome 5. To facilitate progress tracking, output 4.4. has been divided into new outputs 5.1, 5.2, and 5.3. |
| | | 5.2 Project Mid-Term Review is conducted. | |
| | | 5.3 GEF Terminal Evaluation is conducted. | |

5. At the PIF stage, co-financing was indicative. The large majority of indicative PIF co-financing was from the Millennium Challenge Account (MCA) USD 55m, together with a smaller SEforAll component USD 3m. Subsequent consultations at the PPG stage with both the Benin MCA team and the SEforAll teams determined that this co-financing had already been expended in 2021 and 2022, and therefore these co-financing amounts were removed. At the PPG stage, additional consultations identified new sources of co-financing, aligned in timing and substance with the AMP Benin project's activities. The Ministry of Energy's USD 21m contribution relates to ABERME's off-grid public investments. AfDB confirmed the Rural Electrification Project will run into 2023, enabling the project team to add a portion of this as a source of Investment Mobilized (representing roughly one fifth of the duration of the overall AfDB project), given opportunities for synergies on rural energy access investment at the start of the AMP Benin project.

1a. *Project Description*. Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description); 2) the baseline scenario and any associated baseline projects, 3) the proposed alternative scenario with a description of outcomes and components of the project; 4) alignment with GEF focal area and/or impact program strategies; 5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 7) innovativeness, sustainability and potential for scaling up. ?

1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

6. The African Minigrid Program is motivated by the fact that 580 million people in Africa have no access to electricity.[1]¹ Notably, access to adequate and affordable energy as set forth in SDG-7 is a key enabler for other SDGs including poverty reduction, improved health, education, reducing gender inequities, promoting women's empowerment, and inclusive, sustainable economic development.

7. Sub-Saharan Africa (SSA) is characterized by the lowest per capita electricity consumption levels in the world due to a combination of factors including: (i) concentrating of electricity infrastructure in urban areas; (ii) lagging investment in generation, transmission and distribution (G,T&D) infrastructure; and (iii) low purchase capacity impeding lower socio-economic strata of the population to access electricity and other modern energy supplies. In most countries, the traditional electric utility model is technically and financially overstretched, greatly reducing possibilities to attract investment capital and skilled human resources to extend the service. Rapid demand growth has triggered the incorporation of thermal power (fuel oil and recently, natural gas) into the electricity generation mix, increasing the greenhouse gas (GHG) footprint per unit of electricity delivered. Increased fossil fuel imports adversely affect countries' commercial and fiscal balance - a vulnerability put into full evidence by soaring energy prices in 2022, most notably global natural gas prices. With minimal road infrastructure, large distances and often complex terrain conditions, in many countries electricity grid extension to reach remote communities is technically and economically unfeasible for decades to come.

8. Against the backdrop of Africa's demographic expansion, inadequate energy access is one of a series of deficiencies in rural areas which translate into: (1) a lack of perspective and quality of life for individuals; and (2) too low productivity to sustain populations. As a result, countries face a process of migration towards urban centres and emigration to more prosperous countries. Meanwhile, traditional rural livelihoods are under pressure as their natural resource base (including water and soils) is rapidly declining, exacerbated by the effects of global climate change. Technological inputs, protection of the environment and resource base, and modern energy inputs, are critical to increase local productivity to sustain rural livelihoods in a sustainable way. Many Governments acknowledge the need for a sustainable and more decentralized development model for their territories. Notably, the population in many countries in SSA is still predominantly rural relying on subsistence agriculture and livestock farming with traditional biomass being the largest energy supply by source.

9. The 18 countries participating in the AMP Rounds 1 and 2 cover over 300 million people without electricity.[2]². Just four countries were able to increase electricity access at a rate faster than rural and urban population growth rates over the last decade (Comoros, Eswatini, Sudan and Zambia); only three countries provide access to more than 40% of the rural population. In Benin, Djibouti, Malawi, Mali, Niger, Nigeria and Somalia, the number of rural people without access to electricity, has continued to grow even if more people have been connected. This demonstrates the magnitude of the challenge to meet SDG-7 as a basis for inclusive and equitable social and economic development. Especially young people and women are affected in their opportunities to prepare themselves for tomorrow's society and labor market.

[1] [https://www.africadev.com/energy/2018/05/20/african-minigrid-program/](#)

[2] [https://www.africadev.com/energy/2018/05/20/african-minigrid-program/](#)

10. Electric minigrids operated by private businesses, have been identified as a promising model to deliver adequate electricity services to communities and areas beyond the established main grid areas. UNDP and its partners have established the AMP as a regional technical assistance program to increase the financial viability and promote scaled-up commercial investment in renewable energy (RE) based minigrids, with a focus on cost-reduction levers and innovative business models. The programmatic approach aims to achieve greater impact by creating new minigrid markets across the African continent, which, in aggregate, will create scale and momentum, attracting private sector interest and investment. The present child project fits into this approach, in the understanding that many of the circumstances and challenges for minigrid development are common to all targeted countries.

Specific Context and Challenges for Benin

11. (Prodoc ?1-12) The Republic of Benin (Benin) is located in the Gulf of Guinea in West Africa, bordering Burkina Faso, Niger, Nigeria and Togo. A majority of its 11.5 million population lives in the 125-km long southern coastal region, which includes the port capital of Cotonou. The population is 52% rural, and predominantly employed in the agricultural sector, with cotton being a key export commodity driving 40% of the foreign currency income and employing 40% of the rural population.[3]³ Subsistence agriculture has a low level of mechanization and irrigation, but a significant potential for growth: arable land represents over 62% of the territory, but only 20% are currently cultivated.

12. As a Least Developed Country (LDC), Benin has among the highest levels of poverty and inequality in the world. Its Human Development Index in 2019 was 0.545 (158th position out of 189 countries and territories).[4]⁴ The national headcount poverty rate was estimated at 40.1% in 2015 as against 49.5% in 2008. The African Development Bank (AfDB) estimated annual GDP growth rate at 5.5% in 2017 but as a result of fast demographic expansion, per capita GDP growth is only 3.1%. As a consequence, poverty levels in Benin decline slower than hoped.

13. The Ministry of Energy (ME) is responsible for formulating and implementing national energy policy and regulations. The energy regulator is the *Autorit? de R?gulation d?Electricit? (ARE)*, or Electricity Regulation Authority. Total final energy consumption in Benin is estimated at 0.39 ton oil-equivalent[5]⁵ (tep/yr) per capita (2020). Electricity consumption per capita grew by 1.58% over the period 2016-2020, reaching a meager 133 kWh per capita by 2020.[6]⁶ This figure demonstrates the situation of energy poverty that characterizes rural and peri-urban regions. Access to electricity has improved; the national electrification rate in 2020 is estimated at 30.4% and 57.4% in urban areas. This

figure contrasts strongly with the rate in rural areas, which is as low as 5.7%,^[7] implying that about 4.9 million people in rural Benin have no access to electricity.^[8]

14. Global greenhouse gas (GHG) emissions in 2018 amounted to 16.9 million tons (Mton) CO₂eq, or about 1.5 ton CO₂eq per capita, excluding the LULUCF. Energy accounts for 58,09 % of the emissions. Primary energy supply (4,809 ktep, 2020) is dominated by traditional biomass (62%) and petroleum products (33%), followed by natural gas (3%), coal (1%), and electricity (1-2%). Energy Sector emissions (10.6 MtCO₂ in 2020) are dominated by charcoal production (5.7 MtCO₂) and biomass use by the commercial/institutional (4.2 MtCO₂) and residential (8.1 MtCO₂) sectors.^[9]

15. Benin has set the objective to attain electrification rates of 95% (urban) and 65% (rural), as well as a 24.6 % RE share of the national energy mix by 2025.^[10] The updated Nationally Determined Contribution (NDC) seeks to bring the country on a low-emission pathway, including by promoting electricity access in rural areas and phase out fossil fuel (e.g. kerosene) and reducing reliance on charcoal and fuelwood. The ambitions set forth in the NDC imply a 4-fold acceleration compared to the period 2017-22. Off-grid electrification envisions: access to electric lighting by solar kits to reach 13,249 households by 2024 and another 100,000 between 2025-2030; access to electric light for social-community facilities; and rural electrification through small solar PV power plants.^[11]

16. Over the last decade, Benin has made significant progress towards modernization of its energy and electricity sector including the challenge to reach currently unserved and underserved population. The public agency in charge of off-grid electrification is the *Agence Béninoise de l'Électrification Rurale et de la Maîtrise de l'Énergie* (ABERME), which is ascribed to the ME. The agency executed several minigrid programs including PRODERE, funded by the West African Economic and Monetary Union (WAEMU/EUMOA) and PROVES, funded by the Government through an AfDB loan, using solar PV technology. Yet, in 2017 it was estimated that over 2.3 million people in about 1,800 communities would not be reached by the 2028 deadline.^[12] A national policy and master plan (*Plan Directeur de l'Électrification Hors Réseau ? PDEHR*) was approved in 2019 to complement the national grid expansion plan (*Plan Directeur de l'Électricité ? PDE*).^[13] The key challenges for rural electrification and minigrids captured in the PDEHR include the following: (i) mobilizing new actors, (ii) mobilizing new investors to leverage public investment and secure long-term management and expansion of local grids, and (iii) developing local competences for technical management, payment systems, and business operations.

17. In 2020, a new Electricity Law was approved (*Loi No. 2020-05*, 1 April 2020) which integrates national on-grid and off-grid policies into one comprehensive framework in which off-grid

electrification is pursued through a scheme of concessions led by the Ministry of Energy.[14]¹⁴ Putting private operators at the heart of the model, the provision of an adequate regulatory framework is considered essential to reduce technical and financial risks. Several multi- and bi-lateral programs are active in the country providing equity and debt capital to minigrid developers, including the Off-Grid Electrification Fund (OGEF) established by the Millennium Challenge Corporation (MCC) ? Benin ? II, and the Universal Energy Facility (UEF) led by SEforAll and GIZ.

Delivery Model for Off-grid electrification in Benin[OW3] [JF4] :

18. The current delivery model for minigrids in Benin is based on concessions that are legally enabled as public-private partnerships. The Electricity Law 2020 (*Loi No. 2020-05*, 1 April 2020) integrates national on-grid and off-grid policies into one framework. Among other goals (Art.3), it seeks to promote economic development and job creation, reduce dependency on imported energy supplies, diversify energy source and increase the share of RE in final energy consumption, warrant social and territorial cohesion by ensuring an affordable energy cost level for all Beninois; and promote gender equity and social inclusion. Sector development shall abide to the principles of economic and financial sustainability and respect for the environment (Art.4).

19. The key aspects of the foreseen delivery model (which is documented in more details in the Project Document) are summarized in the table below.

| Minigrid Delivery Model in Benin ? Summary of Key Aspects. | | |
|---|--|---|
| Minigrid Area | Minigrid Delivery Model | Service Quality and Tariff |
| Within a geographic perimeter defined by the State. | Electric minigrids are one out of three options to serve off-grid communities. | Arrangements and contractual obligations are detailed in a Model Contract signed between the State and the Concessionaire. |
| Population size and socio-economic development perspective assessed by the State. | Private involvement is shaped as public-private partnerships based on GOB annual work programs. The specific requirements and conditions for each round (call for tender) are set by Decree. | The Concessionaire is held to provide the services in a non-discriminatory manner in abidance to the Terms of Service. |
| Electrification mode (on-grid or off-grid) is determined by the State. | Asset ownership can be 100% private but mixed schemes are also possible, in which part (or all) of the assets is public-funded and owned. | The Concessionaire shall present a tariff proposal, for approval by ARE, according to a prescribed calculation model ?cost plus pricing?. |

| | | |
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| Awarded minigrid operators will be Concessionaires with the exclusive to deliver the public electricity services within the defined perimeter. | Subsidies and financial/tax benefits are offered to enable the Concessionaire to achieve an acceptable return on equity. | The Concessionaire shall strive at delivering the service at the best cost price for the end-user while ensuring service quality, availability, and equitable access. |
| Concessions are issued for a period of 15 or 25 years. | The Concessionaire exploits his/her business to its own risk and exposure and assumes all related costs. | |
| <i>Note: the State is represented by the the incumbent authority, presumably ABERME.</i> | | |

Barriers and risks to renewable energy minigrid development in Benin:

20. (Prodoc ?21, table) The PPG assessed the barriers to minigrid developing in Benin following a simplified version of UNDP?s Derisking Renewable Energy Investment (DREI) Methodology. The main conclusions are presented below in a preliminary fashion. Information sources included stakeholder consultations, the PPG inception and progress workshop, and desk analysis.

21. Energy market: Private concessions are the envisioned delivery model to reach the off-grid population (Electricity Law 2020, Chapter IX). National electrification plans exist for on-grid and off-grid areas; however, coordination issues exist which translate into a risk for minigrid investors. The model contract for minigrid concession includes provisions anticipating the arrival of the main grid. Recent investment in natural gas generation since 2016 may exacerbate Benin?s reliance on imported fuels thereby weakening its commercial balance. Off-grid operators must propose a competitive and differentiated tariff scheme for their concession area. These are not cost-reflective and must be subject to the Regulator for consent. There is a risk that the State will not be able to sustain tariff subsidies. Technical standards are work in progress. While current projects follow international standards, Benin lacks a test laboratory infrastructure for compliance verification.

22. Social acceptance risk: Many people in Benin are aware of minigrids and RE technologies. There is a growing market for PV systems in urban areas and businesses. Hydropower and biomass power plants exist in the country but the potential remains under-exploited. Prepaid payment has been implemented, including under the UNDP/GEF *PANA Energie* project. Surveys are needed to determine people?s willingness to pay, price elasticity, and acceptable tariff levels.

23. Hardware risk: Earlier minigrids have been identified which are in a deteriorated state and underperform, the causes thereof not being clarified. Caution is therefore needed to ensure long-term technical sustainability. Mitigation approaches can be contractual deferring this risk to the operator

(supplier) through extended warranties, service contracting as in the concession model, or engineering, procurement and construction (EPC) modalities.

24. Digital risk: Digital technologies and telecommunication are governed by the Ministère de l'Economie Numérique et de la Digitalisation (MEND), which seeks to increase equitable and inclusive access to communication services to all people and businesses. Most people can use text (SMS) communication protocols, for example to access market information, or transmit system status data. Sector policies have been developed, for example in the field of e-agriculture including the implementation of digital platforms managing sector data and agents. Notably, e-agriculture is viewed by public and private sector as a gamechanger for developing Benin's agricultural potential. As the framework and procedures for digital tendering and monitoring of minigrids are not fully developed in Benin, project partners need to become familiar with aspects such as data quality, analysis and aggregation of data, confidentiality, and institutional set-up for data management. Coordination and capacity gaps expectedly exist, which need to be assessed, remedied and/or worked around.

25. Labor Risk. Operation and maintenance of minigrid systems requires fast responses to maintain service standards. Earlier minigrids under public programmes experienced difficulties to keep the systems up and running, probably due to a combination of factors including insufficient technical skills, lack of supplies and spare parts, and insufficient institutional back-up (including funding constraints). Professional skills including background knowledge and proficiency with O&M of minigrids need to be maintained and updated regularly; similarly, management skills and competences need to be adequate to meet the challenges faced by minigrid operators. Contract terms require minigrid concessionaires to have a local representative; it may prove challenging to find such person.

26. Developer Risk. Experience with private minigrids in Benin is being gained hence the developer risk can be closely monitored over the next years and experiences incorporated into DREI analyses and resulting mitigation activities. ABERME has obtained experience with minigrid development under public funding programmes. Systemic challenges remain including: (i) public sector budget and capacity constraints within the public sector; (ii) transparency to assure of tender process quality; (iii) limited experience and procedures for monitoring of performance-based contracts. Harmonization and automatization of the tendering process by means of digital technologies can help reduce the administrative burden on incumbent authorities, while improving transparency and accountability.

27. Financing Risk. Private minigrids have just started to build a track record in Benin and perceived risks concerning technical performance and financial viability may remain high. The AMP Programme provides an opportunity for collecting experiences and gaining trust in the market. However, low payment capacity in many communities will create challenges for minigrid investors to transit the 'valley of death'[15]¹⁵ and become financially sustainable.

28. Currency and sovereign risks. Benin is relatively stable and responsive to the recommendations issued by its multilateral partners. Security issues have recently appeared including government overturns in Burkina Faso (2022) and in Mali (2021), and incursions from violent groups into the north of Benin. Security aspects may affect the deployment of AMP activities in the northern part of the

country. They may also deter private companies from investing and give rise to a risk premium on capital. Benin's systemic trade deficit is the result of the country's dependence on imports for energy needs and high value-added goods. This condition undermines Benin's ability to take loans to finance additional debt. The sovereign risk is mitigated by the international lending community. Benin has accessed the IMF's Extended Fund Facility (EFF) and the Extended Credit Facility (ECF) with a financial package to the tune of nearly US\$650 million.[16]¹⁶ Without such support, public expenditures in Benin could not be continued.

2) the baseline scenario and any associated baseline projects (see Prodoc ?13-?20)

29. The baseline scenario is characterized by variety of bilateral and multilateral agencies and donors support the GOB towards the attainment of its development objectives and the Sustainable Development Goals, (SDGs), including access to reliable, clean, and affordable electricity for the currently unserved and underserved population in Benin, as well as transitioning current energy systems to low-carbon ones.

30. As related to off-grid electrification, UNDP with its partners has supported the GOB through interventions including the *Projet Commune du Millenaire de Bonou pour un D?veloppement Durable?* (PCM Bonou)[17]¹⁷; the *Projet de Renforcement de la r?silience du secteur de l'?nergie aux impacts des changements climatiques au B?nin?* (PANA Energie)[18]¹⁸; and the UNDP/GEF Project Promotion of Sustainable Biomass-based Electricity Generation in Benin (*Biomasse-Electricit??*)[19]¹⁹. UNDP's involvement has contributed to the adoption of climate change adaptation and mitigation measures in national policies and plans, including the PDEHR, the National Electrification Plan (PNE), the National Renewable Energy Policy 2020-2035 (PONADER), the PONAME, the Electricity Law, and the *M?canisme de Soutien Financier* (MSF - Financial Support Mechanism). UNDP's focus thereby has been on small grids accelerating access to clean electricity for the most disadvantaged strata of the population.

31. Supported by UNDP/GEF project *Biomasse ?lectricit?*, the GOB has boosted the utilization of decentralized RE technologies including biomass gasifiers using organic waste and agricultural residue streams to power isolated mini-grids. Outcomes of this project include contributions to the regulatory framework and notably the MSF. The latter is designed to provide payment guarantees to the private sector operators who will invest in the four (4) envisioned gasifier pilots under the project, totaling 4-MW. The experience can guide the design of financial instruments under the AMP.

32. The Millennium Challenge Corporation (MCC), through its Millennium Challenge Account-Benin II (MCA Benin II), is implementing an off-grid electricity access project consisting of 2 components: (i) the establishment of an enabling environment for off-grid electrification, which led to the adoption

by the government in 2018 of its new regulatory framework; and (ii) the Off-grid Clean Energy Facility (OCEF), which selected 11 companies in a call for proposals in July 2020 for the construction of 8 solar PV minigrids (USD 60 million investment, composed of USD 24 million grant and USD 36 million private sector investment leveraged). The MCA-Benin II is entering into an additional 6th year of implementation (as of June 2022).

33. Sustainable Energy for All (SEforAll), in collaboration with several donors and partners (including the GIZ), is implementing the Benin window of its Universal Energy Facility (UEF).[20]²⁰ In Benin, the UEF planned to disburse grant payments to deliver over 7,000 electricity connections based on a results-based incentive of USD 433 per connection, for a total amount of USD 3 million grant. The programme is leveraging Odyssey, an innovative digital platform using real-time operating analytics to support distributed energy data. As of September 2022, GIZ activities have been extended for another year. The UEF has 5 developers onboard. GIZ is assisting GOB with the tendering of 66 minigrids; some developers have by now been selected. Some minigrids require refurbishment or an increase in capacity. GIZ has recently begun to assess digitalization options for minigrids with ABERME, which is aligned with the AMP approach.

34. The *Agence Française de Développement* (AFD) is focused on on-grid electrification and currently supports 4 projects (a fifth one completed recently), mostly on distribution, but also on production. The PRERA project connected 444,000 people and delivered power transformation stations. The PEDER project (also focusing on distribution) targeted 15 communes in 7 departments, providing 150,000 people with electricity access. DEFISSOL, backed by the EU developed a 25-MW solar PV plant and digital components for SBEE. The FORSUN project seeks the capacity of this solar plant. Close to one million people obtained access to electricity through AFD initiatives at a total of 251M investment.

35. The government-led *Projet de Valorisation de l'Énergie Solaire (PROVES)*, funded by the Government through an AfDB loan, started in 2016 and aimed at electrifying 105 villages through solar PV minigrids built by 6 different developers. More strategically, the AfDB is active in the overall sector through a US\$66.5M loan for rural electrification from its ADB window which runs from 2019 to 2023.

36. Regional programs include the Universal Green Energy Access Programme (UGEAP) funded through the Green Climate Fund (GCF FP027)[21]²¹ offering equity to the private sector. Among other lines of action, it aims to provide financing for decentralized energy service companies for off-grid and mini-grid systems for rural households and communities and renewable energy for industrial players. The UGEAP is managed by Deutsche Bank and is active in Benin. The *Banque Ouest-Africaine de Développement* (BOAD) implements the Climate Finance Facility to Scale Up Solar Energy Investments in Francophone West Africa LDCs, also funded through the GCF (FP105)[22]²². This 20-year program uses a blended finance approach to provide affordable long-term funding to solar projects

and by providing tenor extension loans that will help de-risk projects, and crowd-in commercial and public banks in scaling up solar investments in the region, including Benin.

3) the proposed alternative scenario with a description of outcomes and components of the project (Prodoc ?33-?37)

37. The objective of the Project is: "To support access to clean energy by increasing technical and financial feasibility and by promoting scaled-up commercial investment, in low-carbon minigrids in Benin, with a focus on cost-reduction levers and innovative business models." Specifically, the Benin national project aims to increase the supply of adequate, reliable, affordable, low-carbon electricity for unserved and underserved communities in Benin in support of the country's ambitious national off-grid electrification plan. The Project assigns a high degree of importance to the adoption and ownership of sustainable business models for minigrids as well as to raising the bar on the quality of installations, their operations and maintenance, two elements which may have been lacking in recent minigrids experiments.

38. The Project will foster the national on the delivery model, contribute to further articulate the regulatory framework and to streamline the subprocesses under the off-grid concession process cycle (from project development, application and permitting, to performance monitoring and reporting). In collaboration with the GOB and its development partners, this approach shall help accelerating the market off-take of low-carbon minigrids based on small-scale RE systems, the use of EE electric appliances and productive equipment, and adequate management and after-sales services. Through its focus on value creation from electricity inputs, the Project's Theory of Change is to transform the current cycle of low productivity and living standards in rural areas due to inadequate access to modern electricity and productive technologies, into a virtuous cycle, in which improved electricity services from minigrids in combination with sector development programs, enable higher productivity, which in turn triggers increased demand and generates the necessary revenues (increase in purchase capacity) to sustain the electricity service.

39. The Benin national Project will assume a supportive role to the GOB to assure quality along the minigrid value. This action is expected to increase confidence of investors and the general public in GOB's abilities to manage the off-grid concession delivery model. Supported by UNDP's DREI methodology, it will assess the technical, operational, institutional, and human capacity issues affecting present minigrid systems in the country and issue recommendations for their mitigation.[23]²³ The introduction of digital tools to facilitate data management and the planning, preparation and supervision of minigrid concessions, is expected to greatly reduce the administrative burden for the GOB while reducing transaction costs for applicants. This approach is also aligned with GOB initiatives for modernization of the public administration including the use of digital tools such as GIS platforms for planning and management by several sectors.

40. A brief outline of the Project components, in adherence to the general structure for child projects as indicated by the AMP, is as follows: (1) Policy and regulation; (2) Business model innovation with private sector; (3) Scaled-up financing; (4) Digital and Knowledge Management; and: (5) Monitoring & Evaluation; these components are briefly described below. Please refer to the Results Framework in Annex A for the proposed progress indicators and targets.

41. Component 1: Policy and regulation (GEF US\$ 287,000; co-finance US\$ 5,250,000). Outcome 1: Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon minigrids. (Prodoc ?53-?62). The specific objective of this component is to establish a conducive policy and regulatory framework for the electric minigrid sector in Benin, further articulate sector regulation, and ensure national ownership (Output 1.1). The dialogue is a continuous process focused at streamlining the off-grid delivery model and identify and contribute to work agendas (?chantiers?) covering domains including sector finance, technical standards, governance and performance tracking, and linkages to national targets and ambitions including as set forth in the NDC.

42. The dialogue will take place at the highest level and can be structured through thematic working groups in charge of problem analysis and proposal preparation. Several project outputs are defined to provide relevant inputs including the following. Execution of UNDP?s Derisking Renewable Energy Investment (DREI) techno-economic analysis (Output 1.2). This output will assist the GOB to identify appropriate instruments for de-risking of investments in RE assets and related infrastructure. DREI is a quantitative framework to support policy makers to promote investment in renewable energy and will serve as the AMP?s mechanism to track and share information on minigrid costs and cost reductions. Acknowledging the advanced status of the policy framework in Benin, the Project can support specific derisking instruments as informed by the DREI. Indicatively, relevant support in Benin may target, among other aspects, the methodology used for evaluating the tariff proposals; ensuring gender-responsiveness and inclusiveness of policies and incentives.

43. In support of the concession tendering system for minigrids, output 1.3 seeks to strengthen capacities of sector agencies complementary to baseline support (specifically from GIZ and MCC). Key entities involved include the Ministry of Energy (ME, DGRE), the implementing agency ABERME, and the regulator ARE. The Project team will accompany the GOB on its path towards full ownership of its mandate to lead the off-grid electrification process, in accordance with national policies as laid out in the Electrification Law 2020 and resulting regulation and provisions. The Project Board for the Benin Project is well positioned to evaluate issues and recommendations that emanate from the national dialogue and propose specific actions under the GEF Project in response.

44. The Project will further complement baseline work on quality and performance standards for electric equipment (Output 1.4). The Project shall seek harmonization with common standards in the ECOWAS/UEMOA market. The standards will provide a basis for efficient procurement and quality assurance and contribute to compliance with relevant UNDP and GEF safeguards. As appropriate, a work programme will be set up for specific support by the GEF Project; this can be informed by thematic working groups under the national dialogue platform (Output 1.1). For small grids, opportunities for simplified products standards to achieve cost reductions will be explored. The Project will further support GOB to identify of shortlisted certified test laboratories in the West-African region

for equipment verification, definition of procedures for compliance verification including field inspections. Against the backdrop of malfunction of a subset of earlier minigrids, a detailed technical audit will be performed to obtain a clear understanding of their status including the technical causes for malfunctioning. This information will feed into the design of technical standards.

45. Finally, the Project will cover the cost of services of a social & environmental safeguards expert for periodic review and updating of the SESP and EMSF of the overall project, as needed (output 1.5). Experts will bring in experiences from the AMP Regional Project and share with the incumbent authorities, relevant approaches and methodologies as related to social and environmental aspects of minigrids and the management and recycling of electronic waste.

46. Component 2: Business model innovation with private sector (GEF US\$ 570,000; co-finance US\$ 11,000,000). Outcome 2: Innovative business models based on cost reduction operationalized, with strengthened private sector participation in low-carbon/renewable energy minigrid development. (Prodoc 763-776). Against the backdrop of a growing portfolio of private minigrid concessions aided by bilateral and multilateral investment funds^[24]²⁴, this component pursues the objective to integrate and demonstrate various aspects of the minigrid business model, including: (i) adequacy of the delivery model including community's capacity to effectively support minigrids; (ii) overall quality assurance of all stages of the concession process; (iii) adequacy of technical standards and performance benchmarks; and (iv) optimized system sizing to achieve cost reductions. The minigrid pilots will be selected through a competitive tender mechanism; the specific scope and terms of these to be defined by the Project in dialogue with the GOB, during the first year of Project execution.

47. Benin's Off-Grid Electrification Master Plan (PDEHR) presents a classification of rural communities according to their size and remoteness to the main grid. A methodology is applied to determine the social and economic potential of each community according to a set of parameters (including population size, economic activity, among others). This approach allows for a ranking of communities enabling a prioritization in time. Under guidance of ABERME, the country has progressed in mapping rural communities in the entire country, including surveys of socio-economic and terrain parameters. A promising pilot approach to be explored further - could also be for GOB to rehabilitate and expand an existing minigrid as a *Projet Phare* (Lighthouse Project) following a strict technical and operational due diligence process. The pilot could serve as reference for rolling out inclusive minigrid systems in Benin, and as a benchmark for the GOB to set performance standards for concessionaires. GEF incremental action thereby enables the GOB to address a series of risks thereby lowering the costs and accelerating the market uptake of minigrids in the country.

48. The Project will support the GOB to establish the basis for selection of one or more pilots. Tendering, contracting and performance tracking is foreseen to be automated through a Digital Platform (see Component 4). The pilots shall respond to specific objectives set forth in a Minigrid Pilot Plan (MPP) to be developed under output 2.1. The pilots will enable the incumbent authority to gain proficiency with the configuration and use of the Digital Platform. The MPP will define evaluation criteria for selection of candidate pilot sites, milestones, and go/no-go decision points. The MPP shall

be finalized by the end of Year 1, with support from the AMP Regional Project. The terms of reference will consider, among other factors which the PMU will determine with support from the AMP Regional project, the following: (i) establishing a requirement and incentives for pilots to share data with the project; (ii) including incentives for the proposals to be gender-responsive and (iii) including a requirement for environmentally-sound collection, storage and disposal of all electronic and electrical waste, including rechargeable batteries, associated with off-grid renewable energy technologies.[25]²⁵

49. The Project will provide technical support for pilot implementation through its Project Engineer who will also act as a resource person to the *Mairie*. The Project Engineer will follow-up on permitting processes, and maintain close communication with local communities and beneficiaries. Note that, in response to a tender, a private concessionaire may take charge of installing the minigrid. In this scenario, the role of the MPP and the PE is to accompany the process to ensure that the pilot can be delivered timely to have a reasonable timespan before Project termination to collect meaningful data for fact-finding and learning. The pilot will be equipped with data logging and communication devices to collect operational data, including performance data and information to verify the status of hardware components and meters. GEF funding is available to enable financial viability of the tender, possibly through a CAPEX subsidy complementing GOB cofinance and parallel investment by the investor (to be detailed in the MPP) (output 2.2).

50. The Project further seeks to enhance the social, economic and environmental benefits (output 2.3). Empowerment of end-users and communities is pursued by close engagement with the target communities by specialized national experts, who will perform specific activities such collection of information on energy needs and preferences by women and men; organization of communities for quality assurance and complaints handling; as well as awareness and information campaigns in the pilot community and the broader area. Conduits for building momentum in the communities include associations private businesses, agricultural development organizations, women and youth associations, charity and religious organizations, among others. Where appropriate, the Project will partner with initiatives from sectors including water and sanitation, health, SME development to maximize impact. The Project will identify PUE opportunities in the pilot area and identify the conditions to be met for successful electrification. Fact sheets will be prepared for identified business cases as input for community outreach activities and sharing across the AMP Project community.

51. The exploitation of domestic RE sources is one of the pillars of Benin's strategy to increase energy autonomy. Many unserved areas in Benin are well endowed with potential for decentralized hydropower and biomass systems, which has been mapped as part of Benin's Off-Grid Electrification Master Plan (PDEHR, 2017). This component will assist the GOB to explore opportunities for development and integration of such systems in the minigrid pilot area. Finally, in cooperation with the private sector, the Project will make an effort to draw interest from local individuals in the minigrid sector through engagement with youth and women organizations.

52. Component 3: Scaled-up financing (GEF US\$ 95,000; co-finance US\$ 13,000,000). Outcome 3: Financial sector actors are ready to invest in a pipeline of low-carbon minigrids and concessional

financial mechanisms are in place to incentivize scaled-up investment. (Prodoc ?77-?82). The specific objective of this component is to contribute to the development of financial mechanisms to sustain capital flows towards RE-based minigrids in Benin and foster investors' appetite in this sector.

53. Given the low income level of most of Benin's rural population, end-user tariffs will not enable minigrid operators to fully recover operational costs. Operators applying for a concession shall propose a competitive tariff level. The GOB, through the incumbent authority, will provide a subsidy to the Concessionaire enabling full cost recovery plus a profit margin, to be calculated according to an established methodology and a positive advice by the regulator ARE. As public budgets are heavily constrained as the country largely depends on concessional funding from its development partners for investment and recurrent expenditures, there is substantial perceived risk that GOB could default on its commitment to subsidize electricity tariffs in the medium and long term. This (counterpart) risk deters private parties from investing in minigrid infrastructure, unless additional guarantees can be offered.

54. The Project aims to contribute to the implementation of a financial facility for off-grid electricity systems in Benin. To this purpose, the Project will closely engage with Benin's development partners push forward this agenda (*?chantier?*) to design and implement a long-term financial instrument to this purpose., The Project will support through participation in high-level negotiation and design panels. Public sector agencies and international financiers including representatives of the national *Fonds d'Electrification Rurale et des Energies Renouvelables (FERER)*, the SEforAll/GIZ Universal Energy Facility (UEF) and the MCA-Benin II supported Off-Grid Electrification Fund (OGEF), the African Development Bank (AfDB), the West-African Development Bank (BOAD), World Bank, Islamic Bank, and others. Where possible, leverage of partners and funding is sought through the AMP Regional Project thereby seeking economies of scale.

55. The Project will further explore integrated financing solutions involving public and private agents, which could be more appropriately implemented in Benin through a second-tier bank or a national development bank. The Project will also liaise with the minigrid sector and telecom providers in Benin to identify opportunities for digital payment solutions which can boost local economic development and leverage end-users' money to invest in electric appliances (output 1.1). Finally, this component will target capacities of national financial sector entities by promotion and targeted training, enabling them to better understand and implement RE/EE financing schemes for households and commercial sector (output 3.2).

56. Component 4: Digital and Knowledge Management (GEF US\$ 189,000; co-finance US 700,000). Outcome 4: Digitalization and data mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefitting from linkages to international good practice. (Prodoc ?82-?97). Supported by the AMP Regional Project, this component will make available specialized digital tools and solutions for the off-grid and minigrids sector in the participating countries, identify relevant cases, and assess value and social impact. Digital technologies and solutions are fundamental to enabling off-grid electrification while offering significant cost-reduction opportunities. The project will prepare a digital strategy to improve minigrid scalability and oversight, departing from the overall digital strategy developed by the Regional Project (Output 4.1). A digital hardware/software system (the *?Minigrid Digital Platform?*) will be adapted to the context of Benin, procured, installed and

configured (output 4.2). Expected benefits to the GOB include: (i) validation and storage of data and characteristics of all distributed energy projects/programs at in a centralized database; (ii) interface for collection, management and aggregation of data from all minigrids and connected RE systems; (iii) possibility to run digitized tenders and administer grants; (iv) performance verification of minigrids; (v) real-time monitoring and evaluation of electrification projects/programs; and (vi) advanced analytics of minigrid portfolios to generate critical insights. The platform will presumably be hosted by ABERME and designed in coordination with the respective sector entities and their development partners, ideally to harmonize processes and align them with the provisions of the Electricity Law 2020 and forthcoming decrees and resolutions.[26]²⁶

57. A standardized framework (the Quality Assurance and Monitoring Framework -QAMF) will be developed by the AMP Regional Project for measuring, reporting and verification of the impact of the supported pilots, to be adopted by the child projects (Output 4.3). Learning and capturing of lessons learnt is a key aspect of the AMP Regional Project. Communities of Practice (CoP) are supported by UNDP's partner in the AMP, the Rocky Mountains Institute (RMI). The COP will share knowledge and facilitate the development of solutions to common challenges within the African minigrid sector providing support to ministries, government agencies, and electric utilities, among others. The CoP will strengthen South-South cooperation and learning, drawing on the experiences of participating countries in minigrid cost reduction and deployment, with a focus on policy & regulations, finance, and new business models (Output 4.4). Within this approach, all projects will contribute to the preparation and publication of knowledge products (?insight briefs?).

58. Component 5: Monitoring & Evaluation (GEF US\$ 64,588; co-finance US\$ 200,000). Outcome 5: Ensuring compliance with all mandatory monitoring and reporting requirements of the GEF. (Prodoc ?98-?99). This component will assist the Implementing Partner in establishing project oversight and monitoring systems, It will assist the IP during the inception phase to operationalize tools including the M&E Plan, understanding project risks and assumptions, and use of the Risk Log (output 5.1). It further comprises the implementation of the Mid-term Review (MTR, output 5.2); and the GEF Terminal Evaluation (TE, output 5.3) of the Project.

4) alignment with GEF focal area and/or impact program strategies

59. This Project is aligned with GEF-7 Climate Change Mitigation Objective 1: "Promote innovation and technology transfer for sustainable energy breakthroughs", through CCM 1-1 - Promote innovation and technology transfer for sustainable energy breakthroughs for de-centralized renewable power with energy storage. It also contributes to GEF-7 Programming Directions to accelerate "the speed and scale of sustainable energy investment in developing countries", to develop "innovative business models that go beyond business as usual" and to foster innovation.

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCE, SCCF, and co-financing

60. The Project builds on Benin's baseline scenario for on-grid and off-grid electrification, seeking to increase electricity coverage in particular in rural areas, further improving service quality to boost economic development and reduce social and geographic disparities, and drastically reduce dependency on imported fossil fuels by prioritization of low-carbon energy technologies. The baseline scenario responds to national policy, plans and legislation including the Off-Grid Electrification Policy (PHER, 2017), the updated NDC (2021), and the Electricity Law 2020. As related to off-grid electrification, the baseline scenario is supported by public initiatives to prepare and operationalize electrification plans which are updated periodically. There are solar-PV minigrids in the country that were developed under public programs and currently operated by the communities (the *Mairies*). The baseline is further supported by lending schemes providing equity and debt capital to the private sector, including the MCA Benin ? II / OCEF (which runs until 2023) and the SEforAll / GIZ Universal Energy Facility (UEF). The African Development Bank (AfDB) is active in the rural electrification sector through a USD 66.5M loan from its ADB window, which runs from 2019 to 2023, as well as several programs funded through from the Green Climate Fund (GCF), including the Universal Green Energy Access Programme (UGEAP) and the BOAD-implemented Climate Finance Facility.

61. The AMP national Project in Benin is strategically positioned to address identified barriers that currently delay the implementation of off-grid electrification programs, impeding the GOB to achieve its goals in a timely manner. These barriers include: (i) capacity limitations and process challenges within the incumbent authority impeding GOB to fully assume its role to lead the minigrid sector; (ii) delays in project preparation, permitting and licensing procedures which translate into increased transaction costs for private project developers; (iii) limited operational capacity and tools within the incumbent authority to manage the minigrid portfolio, notably to track performance of minigrids concessions, and accurately execute results-based contracts including timely payment according to set milestones. This in turn, may undermine the private sector's trust in the chosen delivery model and lead to a high (perceived) counterpart risk.

62. Acknowledging progress under the baseline and the crowded field of development partners including financiers in the sector, the AMP Project in Benin appears timely to address these barriers through incremental action according to the outputs described in the above section 3). Key results include the continued dialogue and reflection on the chosen delivery model including finetuning of regulation, appropriate technical standards, and a permanent monitoring of the market to ensure investor's appetite while preserving the interests of the State and the end-users; as well as the design and implementation of a digital strategy in coordination with the GOB and its partners, envisagedly culminating in the delivery of a robust Digital Platform as a key asset for GOB to manage the portfolio. One or more pilots will be tendered to deliver high-quality minigrids that may serve as a reference for the sector, allow operational data collection for extracting lessons learnt (?Knowledge Products? to be shared with the AMP Regional Project). The pilots will further enable to explore the energy nexus with gender, agriculture, and e-commerce, among others, to enhance the social, economic, and environmental benefits of rural electricity supply.

63. The expected contributions from the baseline will be of the order of USD 33,200,000 as specified in Table C. As part of the baseline commitments, UNDP will provide USD 200,000 TRAC funds (grant administered by UNDP) and continuous support to the Implementing Partner through the AMP Regional Project team, the Regional Support Centre and the UNDP Country Office in Benin.

6) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

64. (Prodoc ?100-101) The project is expected to bring about the direct commissioning of approximately 0.4 MW in solar photovoltaic (PV) generation capacity and 0.9 MWh of battery storage. The lifetime greenhouse gas (GHG) emission reduction from project activities, particularly investment in minigrid pilots, is estimated at approximately 9,000 metric tons of carbon dioxide equivalent (tCO₂eq) (direct) and 180,000 tCO₂eq (indirect). The number of direct beneficiaries is estimated at 12,000 people, of which at least 50% are women, as a result of 2,400 new and/or improved minigrid connections.

7) innovativeness, sustainability and potential for scaling up

65. (Prodoc ?120-?123) Innovation is at the core of the AMP Program given its focus on cost-reduction and enhanced business models to reduce minigrid cost to increase affordability of RE-based electricity. Business involvement is sought to access private capital to leverage public investment and grant funding. De-risking of RE investments in combination with cost reduction translates into lower financing costs for the investor and increases economic and financial sustainability. Hardware, project development, and operational cost reductions are sought through competitive selection of minigrid project proponents to set a trend towards lower unit energy costs (LCOE) in the region. The incorporation of productive energy uses provides opportunities for income generation in communities improving local capacity to pay for, and sustain, the service.

66. The focus on the utilization of digital technologies is another innovation of the AMP, harnessing the opportunities of digitalization for improved efficiencies, lower costs and risks, facilitate the flow of investment and revenue streams, and thereby contribute to sector development in the region. So far, the minigrid market has not fully exploited the potential of digital tools and solutions to accommodate multiple, decentralized and distributed 'data points' in the minigrid system. Finally, the regional approach enables national projects and implementation partners to engage, learn and share experiences and best practices as input for national and regional policy agendas and programs.

67. Social and economic sustainability is pursued based on a human rights approach to secure access to clean and affordable energy and related services. RE-powered minigrids have proven to be superior to conventional diesel grids in terms of energy costs, operability, and maintainability; and are environmentally superior. The Benin Project aims to test and anchor the required boundary conditions for minigrids to actually deliver on this promise. These include: (a) thorough specification of applied hardware, including a definition of the appropriate product choice striking a balance between hardware

design, serviceability, repairability, replacement, and overall costs and support infrastructure; (b) social acceptance including local willingness to pay and care for installed equipment; (c) promotion of productive energy uses and access to finance for appliances and equipment by end-users; (d) integration of environmental protection aspects in the business model (such as waste collection). On this latter point, UNDP's Social and Environmental Screening Procedure (SESP) specifically included, under Risk #14, measures to deal with the generation of hazardous waste (specifically e-waste) from the pilot minigrids that have been installed. These measures, while primarily concerned with the environmental sustainability of the project, could also provide opportunities for job creation in the handling and recycling of these otherwise precious elements/materials. Finally, given beneficiaries' low income levels, the Project seeks securing financial and operational sustainability under Benin's concession model for off-grid electrification.

68. Potential for scaling up is significant at project level as well as strategically. The Project envisions accelerating market uptake of minigrids serving the over 2 million people that would not be reached by expansion of the main grid. This market potential is readily demonstrated by the presence and activity of multilateral and bilateral financiers in the sector (e.g., MCC, UEF, UGEAP, BOAD).

[1] <https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity>

[2] Round 1 countries: 221.3 million people without access to electricity, Round 2 countries: 63.4 million

[3] https://www.wto.org/english/tratop_e/agric_e/01_benin.pdf

[4] <http://hdr.undp.org/en/countries/profiles/BEN>

[5] Source: National Energy Balance - *Chiffres Clés* 2021, p.12 (1 tep = 41.868 GJ = 11.63 MWh).

[6] About 1/3 of the average in Sub-saharan Africa.

[7] *Rapport du Système d'Information Énergétique* (SIE) Benin, 2020.

[8] If electricity self-supply such as diesel and gasoline generators is taken into account, the figures increase to 33.4%, 60.3% and 8.7% respectively (INSAE data, 2020).

[9] Source: National Energy Balance - *Chiffres Clés* 2021.

[10] <https://www.se4all-africa.org/seforall-in-africa/country-data/benin/>

[11] NDC, *Volet système électrique hors réseau, actions* 14-16.

[12] PEHR, 2017.

[13] The Plan Directeur d'Électrification Hors Réseau, prepared for the Ministry of Energy of Benin by IED Innovation Energie Développement (IED) consultants and Practical Action and funded through the Millennium Challenge Account Benin (MCA Benin II).

[14] https://are.bj/wp-content/uploads/2017/09/LOI-N-2020-05-PORTANT-CODE-DE-LELECTRICITE-EN-REP-DU-BENIN_1.pdf. The law governs all aspects of electricity in Benin except: those subject to existing bilateral agreements, electricity supply systems for telecommunication installations, and thermal self-supply that is not commercialized (Art.2).

[15] The 'valley of death' refers to the challenge for a viable technology or business to grow and reach the necessary scale to become financially sustainable. See also: IRENA Innovation Outlook Minigrids 2016, p.94.

[16] <https://www.imf.org/en/News/Articles/2022/07/14/CF-Benin-Taps-IMF-Facilities>

[17] <https://info.undp.org/docs/pdc/Documents/BEN/PRODOC%20PCM-Bonou.pdf>

[18] <https://energie.gouv.bj/page/projet-de-renforcement-de-la-resilience-du-secteur-de-lenergie-aux-impacts-des-changements-climatiques-au-benin-pana-energie>

[19] GEF Project Promotion of Sustainable Biomass-based Electricity Generation in Benin (GEF ID 5752, UNDP PIMS 5115 ; GEF Budget US\$ 3,872,602). The Project is currently under implementation. See: <https://www.thegef.org/news/building-sustainable-energy-future-benin>

[20] A results-based financing scheme funded by the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

[21] <https://www.greenclimate.fund/project/fp027>

[22] <https://www.greenclimate.fund/project/fp105>

[23] To this effect, the Project expects to benefit from experiences under the PANA Energie project, as well as support offered by the AMP Regional Project.

[24] Reference to current programs UEF, MAC, etc.

[25] Note that the items (ii) and (iii) are also demanded by national Law.

[26] Please note that OCEF and UEF already operate under a tender scheme under purview of ABERME. However, the structure and milestones of these programs were defined prior to 2020. Staffing limitations and the need to manage and supervise a growing portfolio of concessions and minigrids give rise to an urgent need to expedite processes, make efficiency gains. Digital solutions, if properly designed and implemented, are instrumental to keep control in the long-run while keeping overhead costs within control. The AMP Project appears very timely to support GOB and its partners towards realization of this goal.

[OW1] Is this row correct? I think we may have mixed the cells up in this row. This text seems to be the CEO ER text. Please double check.

[JF2] Good catch. Indeed, that table had been created very early on, it seems, and had not been updated. I did not notice it.

Now corrected, and I have double-checked all others and found some discrepancies (adjusted).

[OW3] B, please sort out the formatting for this new text. Paragraphs are no longer numbered, spacing is off etc.

Are you also sure you wish to have all this text and detail here? Can it be slimmed down or made more accessible? The initial text and summary table?

[JF4] Good idea. Done just that. I believe the expansive text was a rough copy-paste from ProDoc. I've added a short indication that more info is available in ProDoc.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

69. The continental territory of Benin is comprised within a rectangle stretching between: 12°24'51.8"N (North) and 6°14'08.0"N (South); 0°46'29.4"E (West) and 3°50'35.9"E (East).. For a map, reference is made to Annex E. Upstream interventions address sector policies and capacities for off-grid electrification, which are applicable in the entire territory of Benin. Specific minigrid pilot sites will be selected during project implementation. At this stage, no detailed coordinates are available for these.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

70. (Prodoc, ?22-32) The Project is part of the Africa Minigrids Program (AMP, GEF ID 10413), a regional technical assistance program with the objective of supporting access to clean energy by increasing the financial viability and promoting scaled-up commercial investment in renewable minigrids, with a focus on cost-reduction levers and innovative business models. The programmatic approach aims to achieve greater impact by creating new minigrid markets across the African continent, which, in aggregate, will create scale and momentum, attracting private sector interest and

investment. It will also allow for a broader sharing of knowledge and good practice and create economies of scale in providing program services.

71. The AMP is comprised of two main elements: (i) a Regional Project, acting as the knowledge, advocacy and coordinating platform of the Program; and (ii) a cohort of an initial 21 AMP National Projects that share a common approach, seeking to reduce minigrid costs via five country-level components: (i) policy and regulations, (ii) business model innovation with private sector, (iii) scaled-up financing, (iv) digital and knowledge management; and (v) M&E. With UNDP acting as the lead GEF Agency, the Regional Project activities are executed by UNDP's partner the Rocky Mountains Institute (RMI).

72. Within this architecture, AMP will emphasize - and seek to develop comparative advantages - in three key areas of opportunity: (i) an emphasis on advancing national dialogues on minigrid delivery models, (ii) promoting productive uses of electricity (PUE), and (iii) leveraging data and digital solutions for minigrid cost-reduction. Collectively these three areas can guide AMP's overall direction, creating a niche identity for the program. The child projects including the Benin Project have assigned budget for supporting minigrid investment pilots seeking to demonstrate innovative business models and cost-reduction opportunities (Component 2). The minigrid pilots play a key role within the AMP by probing and demonstrating cost-reduction opportunities which can be leveraged to improve the financial viability of renewable energy minigrids. The pilots are aligned with one or more of the three key areas of opportunity mentioned above.

73. All child project components and outcomes are structured according to a harmonized Results Framework. Standardization at output level has been pursued through a menu of applicable outputs allowing an approach tailored to the needs of each individual country as determined through the assessment of risks and barriers (Prodoc, table 20). This structure is further specified at the activity level. Progress and impact monitoring is done through a harmonized set of indicators for all child projects, which feed into the aggregated indicators of the AMP.

2. Stakeholders

Please provide the Stakeholder Engagement Plan or equivalent assessment.

74. (Prodoc 115-117) The Stakeholder Engagement Plan is presented in Prodoc, Annex 8. This Plan will be used as a tool for reference and will be further detailed during the Project's inception phase and updated annually. The Stakeholder Engagement Plan is a starting point for the design of the Project communication strategy and specific communication plans which will be further elaborated during the inception workshop (output 5.1.1).

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor;

Co-financier; Yes

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor;

Other (Please explain) Yes

75. The following national stakeholders have been identified and are involved in the Project:

These stakeholders were consulted at various points during project preparation, including during inception and validation workshops. A full list of attendees to these workshops as well as the list of local authorities met during field visits is available.

| List of Stakeholders and Project Partners | |
|---|---|
| Name | Role |
| 1. Energy | |
| Ministère de l'Énergie (ME) | Mandate: Design, monitor and evaluate the general energy policy of the State, in accordance with the conventions and laws and regulations in force in the Republic of Benin. Role in project: Implement project through its Directorate (DGRE- below). |
| Direction Générale des Ressources Énergétiques (DGRE) | Mandate: To elaborate, in liaison with the competent national structures, the Government's policy on the development of energy resources, means of production, transmission and distribution of energy as well as that relating to energy efficiency, energy management, supply, quality control, storage and distribution of energy and to ensure their implementation. Role in project: PMU hosting and implementation. |
| Agence Béninoise de l'Électrification Rurale et de la Maintenance de l'Énergie (ABERME) | Mandate: Implement State policy in the fields of rural electrification and energy management. Role in project: contribute to relevant activities. |
| Autorité de Régulation de l'Électricité (ARE) | Mandate: Ensure compliance with the laws and regulations governing the electricity sector, protect the general interest and guarantee the continuity and quality of service, the financial balance of the sector and its harmonious development. Role in project: contribute to relevant activities. |
| Agence de Contrôle des Installations Électriques internes (Controlec) | Mandate: Ensure control and compliance with technical standards in indoor electrical installations Medium Government. Role in project: contribute to relevant activities. |
| Société Béninoise de l'Énergie Électrique (SBEE) | Mandate: Produce, purchase and distribute electrical energy. Role in project: contribute to relevant activities. |

| | |
|---|--|
| Agence Nationale de Normalisation, de Métrologie et du Contrôle Qualité (ANM) | Mandate: Implement and monitor and evaluate the national policy of standardization, metrology, certification, product verification and quality promotion. Role in project: contribute to relevant activities. |
| 2. Economy and Finance | |
| Ministère de l'Économie et des Finances | Domestic and external resource mobilization and monitoring. Role in project: contribute to relevant activities. |
| Banques, établissements financiers à caractère bancaire et Systèmes Financiers Décentralisés (SFD) | Support for the private sector through the granting of credit and advice. Role in project: contribute to relevant activities. |
| Donors and technical Partners | Various roles (as per baseline) |
| 3. Climate Change and Environmental Protection | |
| Ministère du Cadre de Vie et de Développement Durable (MCVDD) | Define, monitor the implementation and evaluation of the State's policy on housing, urban development and sustainable cities, geomatics, spatial planning, sanitation, environment and climate, preservation of ecosystems, water, forests and hunting. It also participates in the definition and monitoring of the State's land and cadastre policy. Role in project: contribute to relevant activities. |
| Direction Générale de l'Environnement et du Climat (DGEC) | Develop and ensure the implementation and monitoring of policy, state strategies and national regulations on the environment, management of the effects of climate change and promotion of the green economy in collaboration with other structures concerned. Role in project: contribute to relevant activities. |
| Fonds National pour l'Environnement et le Climat (FNEC) | Ensuring the protection and rational management of the environment, combating the adverse effects of climate change and promoting sustainable development in Benin. Role in project: contribute to relevant activities. |
| Agence Béninoise pour l'Environnement | Implement, with the participation of all relevant national institutions, the national environmental policy. It ensures the integration of the environment into sectoral policies and/or strategies. Role in project: contribute to relevant activities. |
| 4. Education and Professional Training | |
| Ministère de l'Enseignement Supérieur et de la recherche Scientifique (MESRES): Universités publiques et privées, et centres de recherche | Define, monitor the implementation and evaluation of state policy on higher education and scientific research. Role in project: contribute to relevant activities. |
| Ministère de l'Enseignement Secondaire et de la Formation Professionnelle | Define, monitor the implementation and evaluation of State policy on secondary education and vocational training. Role in project: contribute to relevant activities. |
| 5. Gender and Community Development | |
| Communes | Contribute to the supply of electrical energy to the population. Role in project: contribute to relevant activities. |
| 6. Transversal Entities | |
| Ministère du Numérique et de la digitalisation | Ensure the implementation and monitoring and evaluation of the national policy for the development of the digital economy and communication. Role in project: contribute to relevant activities. |

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

73. The Gender Analysis and Gender Action Plan (GAP) are attached as Annex 10 to this Project Document. The Plan is to be expanded during the Project's inception phase and will be periodically updated. It shall also benefit from ongoing engagement with stakeholders and result in concrete actions. The GAP is one of the instruments under the Social and Environmental Management Framework (ESMF).

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on private sector engagement in the project, if any

77. (Prodoc, ?104-105) The private sector assumes multiple roles in the Project and, in the broader sense, as a group of agents in Benin's off-grid electricity delivery model. These roles include: (a) RE equipment and electricity grid hardware supplier; (b) project developer bringing in technological, managerial and process know-how; (c) operation and maintenance (O&M), largely relying on national businesses entering the market; (d) foreign and national capital providers and investors; (e) services including specialized companies (as well as non-for-profit entities) providing technical and financial services for project development, social and environmental assessments; (f) domestic banking sector; (g) minigrid operators and telecom businesses involved in innovative payment systems and derived services.

78. The private sector will be directly engaged through procurement of goods and services. Business events and consultations will be used to engage with the sector to have relevant feedback and foster interest in the minigrid market, and to learn about innovative technologies and solutions under development.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

79. (Prodoc, ?109-114) The overall risk profile of the Project has been assessed as 'substantial'. Based on the risk categorization assigned to the various country projects and the associated environmental and social risks, the following procedures for screening, assessing and managing those risks must be undertaken during project implementation of each country project. (1) Screening of social and environmental risks and impacts and determining applicable social and environmental standards and requirements (including UNDP SES). The screening process utilizes UNDP's SESP and develops a specific screening procedure for the forthcoming type of sub-projects/activities. (2) Appropriate types of social and environmental assessment to identify, document and address potential social and environmental risks and impacts. (3) Preparing and approving time-bound action plans for avoiding, and where avoidance is not possible, reducing, mitigating, and managing adverse impacts, including development of specific management plans according to applicable policies and regulations, including UNDP's SES (i.e. Environmental and Social Management Plans which would be completed post-assessment).

80. Specifically, the SESP identified 14 risks, 2 of which assessed as 'substantial', 11 as 'moderate', and 1 as 'low'. The DREI framework identifies 10 main risk categories which indicate an overall moderate market risk for minigrid development (see Prodoc ?20, table). Social and environmental risks are primarily linked to human rights given the challenges to secure social inclusiveness and incorporate vulnerable people. Among other root causes, underlying factors include very low-income levels of rural people living in small communities which rely on subsistence farming and collection; undefined or absence of land tenure titles and associative structures enabling people to claim their rights; demographic pressure which may lead to local movements of people as a result of electrification, potentially separating them from their food sources.

81. While electricity supply is a socio-economic enabler, the nexus between productive uses and electricity supply needs to be further articulated ? including according to gender. To address this risk, the Project design incorporates sustained community engagement during the preparation phase of the proposed pilots. This activity will draw upon country knowledge and positive experiences in other sectors (e.g., agricultural development and small-scale e-commerce) to make these available to the energy sector in Benin.

82. Environmental risks are essentially two: (i) potential adverse impacts on biodiversity and habitat; and (ii) dispersal of electronic waste including batteries, into the environment. As related to the former, Benin is highly vulnerable to the effects of climate change, exacerbated by human activity including over-exploitation of soils and aquifers, which can lead to loss of species, soil erosion, and degradation of rivers and aquifers. Electrification will lead to increased human activity; adverse effects are mitigated by proper planning, avoiding specific areas such as natural parks altogether, and promote best practices including changes in attitude among local dwellers. The community engagement shall result in an appraisal of site-specific risk and determination of mitigation options.

83. As concerns the latter, the PPG observed that waste management policy is advancing in Benin but facilities for adequate disposal, or transfer for recycling are often absent in rural areas. In particular non-degradable waste and objects (plastics, batteries, broken equipment and tools) are prone to be abandoned and become dispersed in the environment. The situation poses a challenge for the repair and end-of-life treatment of minigrid components including wiring and electric appliances. Increasing awareness of the local population and inducing a sense of ownership and responsibility is one line of action. A second one is

the integration of electronic waste management into an Extended Supplier Responsibility (ESR) scheme. It is noted that the sector legislation in Benin requires off-grid electricity concessionaires to comply with social and environmentally sound practices as part of their contractual obligations.

84. For more details, reference is made to the ATLAS Risk Log, Table (below).

| # | Description | Risk Category | Impact & Probability | Risk Management Measures / Treatment | Risk Owner |
|---|-------------|---------------|----------------------|--------------------------------------|------------|
| Social and Environmental Risks and Mitigation Measures | | | | | |

| | | | | | |
|---|---|---|----------------------------|---|-----------------|
| 1 | <p>Discrimination or marginalization of vulnerable communities through the proposed tariff model in the proposed minigrid regulation.</p> <p>Income levels in project sites are generally low. This creates a risk that low-income households would not be able to benefit from the project pilot and from minigrids that may be established as a result of upstream activities.</p> <p>Under Benin's concession model, minigrid operators must propose a competitive, yet inclusive, differentiated tariff scheme, to be ratified by the Regulator. The Project's demonstration pilot will abide by this model. If not taken into consideration, this model may lead to setting tariffs that would discriminate against vulnerable communities (including low-income households) and prevent them from having access to essential energy services.</p> | Social and Environmental - Human Rights | I = 4, L = 3 (substantial) | <p>As the project risk category has been rated as Substantial, an Environmental and Social Management Framework (ESMF) has been prepared and annexed to the ProDoc. The ESMF requires that the Activity 1.1.3 (Update pertinent regulation, guidelines, and processes for minigrid concessions, in line with the new Electricity Law of 2020), undergo a Strategic Environmental and Social Assessment (SESA) that would take this risk into consideration in the decision-making process. In addition, a Stakeholder Engagement Plan (SEP) has been prepared to ensure that stakeholders have an opportunity to provide feedback on decisions that may affect them. Through this SEP, the Project will devise strategies to reach out to low-income families. Depending on the identified impacts, a Livelihood Action Framework may also be developed if needed.</p> <p>As per Electricity Law 2020, the service shall be metered and by default, billing is prepaid through convenient amounts adapted to the purchase capacity and needs of a variety of customers. Assistance shall be provided to customers who face difficulties to understand and use smart meters. Mechanisms to settle disputes and billing errors are foreseen; and the Concessionaire has the right to suspend the service to customers who decline to pay or tamper with their connection.</p> <p>The project will also put in place a project-level GRM to provide meaningful means for local communities and affected populations to raise concerns and/or grievances when activities may adversely impact them.</p> | Project Manager |
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|---|--|--|--------------------------------|---|------------------------|
| 2 | <p>Risk on lack of ability for people to claim their rights within the areas served by the pilot minigrids.</p> <p>Lack of transparency and tedious or costly procedures of people/customers to claim their rights may exist within the pilot areas and often the legal or contractual basis for claiming these rights is not well defined or even absent.</p> | <p>Social and Environmental - Human Rights; Accountability</p> | <p>I = 3, L = 4 (moderate)</p> | <p>Through the Stakeholder Engagement Plan, the Project shall give priority to community engagement to ensure that No-one is Left Behind. This will imply a proactive attitude to reach out to vulnerable people and groups and treat people equally.</p> <p>The project will also put in place a project-level GRM to provide meaningful means for local communities and affected populations to raise concerns and/or grievances when activities may adversely impact them.</p> | <p>Project Manager</p> |
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|---|---|--|--------------------------------|--|------------------------|
| 3 | <p>Marginalization of vulnerable groups when developing standards and selecting the pilot minigrids</p> <p>Domestication of quality standards for solar mini-grid components may marginalize stakeholders from participating in this sector, or from having access to energy by setting stringent technical criteria. Selection of pilot minigrids, if not done in collaboration with all stakeholders also risks marginalizing certain groups, including indigenous peoples.</p> | <p>Social and Environmental - Human Rights; Accountability</p> | <p>I = 3, L = 3 (moderate)</p> | <p>A Stakeholder Engagement Plan has been prepared to manage this risk, which is associated with Output 1.4, through engaging stakeholders to ensure that standards do not marginalize any specific group and exclude them from the decision-making process on issues that affect them. It will also provide input for selection of the pilot minigrid site (Output 2.1).</p> <p>If the minigrid pilot site or its associated infrastructure is located in close proximity to or on land used by Indigenous Peoples, Free and Prior Informed Consent (FPIC) will be obtained prior to validation of the site. Towards that end, an Indigenous Peoples Policy Framework (IPPF) has been prepared to tackle this issue. During preparation of the Environmental and Social Impact Assessment (ESIA) for the pilot minigrid and based on the developed IPPF, an Indigenous Peoples Plan (IPP) (or its equivalent) will be developed (at the site-level or other level, as deemed appropriate) and implemented, along with measures for FPIC, as needed for compliance with the SES.</p> <p>The project GRM will also help in managing this risk by providing a means for affected stakeholders to raise concerns and/or grievances.</p> | <p>Project Manager</p> |
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| | | | | | |
|---|---|---|-----------------------------------|--|------------------------|
| 4 | <p>Reproducing existing discriminations against women through excluding them from decision-making on project activities, benefiting from project outputs and capacity building initiatives.</p> <p>Social and cultural factors leading to different roles between men and women in Benin and the current prevalence of men in the electricity sector may pose a challenge to ensure that women will have the chance to participate at the decisions-making level.</p> | <p>Social and Environmental - Gender Equality and Women Empowerment</p> | <p>I = 4, L = 4 (substantial)</p> | <p>Measures have been established through the Gender Analysis and Action Plan established at the PPG phase, to manage and reduce the risks identified on women.</p> <p>Examples involve the following:</p> <ul style="list-style-type: none"> ? Inclusion of women in the national dialogue ? Elevating the importance/role of domestic appliances in alleviating women's time poverty and reducing the division of labor according to gender ? Supporting gender equality in the minigrid supply chain and enabling environment ? Mitigating the chances that new minigrid management and data tools have unforeseen negative consequences for women ? Building financial inclusion for women as electricity suppliers and users ? Sharing insights and best practices across projects. <p>In addition, this risk will be further assessed in the SESAs and Environmental and Social Impact Assessments (ESIAs) that will be undertaken during project implementation as described in the ESMF.</p> | <p>Project Manager</p> |
|---|---|---|-----------------------------------|--|------------------------|

| | | | | | |
|---|--|--|--------------------------------|---|------------------------|
| 5 | <p>Damage to biodiversity, natural resources and cultural heritage sites due to installation and operation of pilot minigrids.</p> <p>Pilot minigrids may be located within or near critical habitats, environmentally sensitive areas or cultural heritage sites. However, as the pilot will only entail rehabilitation of an existing MG changes to the use of lands and resources, affecting natural ecosystems may only result from associated infrastructure such as extension of the network.</p> <p>Furthermore, mini-grids with a productive use entail unforeseen impacts should be expected according to the type of sector and activity to develop.</p> | <p>Social and Environmental - : Biodiversity Conservation and Natural Resource Management; Cultural Heritage</p> | <p>I = 3, L = 2 (moderate)</p> | <p>The pilot minigrid (Outputs 2.1 and 2.3) will incorporate SES criteria during the site selection process and adopt the list of exclusion criteria that is found in the ESMF. After selection and before commencement of the pilot activity, the pilot minigrid will undergo a scoped ESIA or targeted assessment that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific Environmental and Social Management Plan (ESMP). Details of this process can be found in the ESMF.</p> | <p>Project Manager</p> |
| 6 | <p>Exposure to electrocution risks for humans and any fauna (ex. animals or birds) using the minigrid area.</p> <p>All mini-grids involve electrical equipment. At the operational stage, the electrical structure alien to pre-existing conditions in the area, may cause the damage/death/fire/et due to the interaction with people living nearby, fauna and flora.</p> | <p>Social and Environmental - Biodiversity Conservation and Natural Resource Management; Community Health, Safety and Security</p> | <p>I = 3, L = 2 (moderate)</p> | <p>Selection of the pilot will include a screening on all relevant criteria of the SESP. Before commencement, the pilot will undergo a scoped ESIA or targeted assessment that will analyze all relevant risks. Mitigation measures, such as fencing of the PV plant is essential as well as guarding through community official guards, will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF.</p> | <p>Project Manager</p> |

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| 7 | <p>Climate events and disasters (including floods) on new and existing infrastructure.</p> <p>Benin is considered highly vulnerable to global climate change, ranking 155 out of 181 countries in the ND-GAIN index for climate vulnerability. Current trends include intensification of droughts and rains (by 100 mm/h) exacerbating soil erosion and leading to floods. Climate projections expect sea level rise by 0.4 to 0.7 meters by 2100, probably resulting in coastal disasters (complete coastal erosion, floods, and storm waves). Overall, the coastal, north-western, and far northern zones of Benin are considered to be particularly vulnerable to the impacts of climate change.</p> <p>As mini-grids are open air structures, they are exposed to climate events and involve build structures that may be vulnerable to the impacts of climate change or disasters.</p> | Social and Environmental - Climate Change and Disaster Risks; Community Health, Safety and Security | I = 3, L = 3 (moderate) | The pilot minigrid (Outputs 2.1 and 2.3) will undergo a scoped ESIA or targeted assessment that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF. The design of structures and equipment shall consider local conditions including heavy rainfall affecting electric insulation classes and pole foundations, among others. | Project Manager |
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| 8 | <p>Risk on the community due to domestic connections and electricity usage, and presence of hazardous materials (mainly batteries, e-waste).</p> <p>The novelty of some structures and practices brought about by the project may become a source of harm if not accompanied with concomitant awareness of risks and safe practices. More specifically, the use of hazardous materials by the project, domestic electrical wiring and connection activities and subsequent domestic usage of electricity.</p> | <p>Social and Environmental - Community Health, Safety and Security</p> | <p>I = 3, L = 2 (moderate)</p> | <p>The pilot minigrid (Outputs 2.1 and 2,3) will undergo a scoped ESIA or targeted assessment that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF. In particular, operators, contractors and owners of sites shall be required to abide by the ESMP's requirements on safety measures and minimum qualifications for the handling of hazardous materials.</p> <p>National legislation requires qualified electricians. Consumer awareness campaigns should also be performed, including through local workshops, clear signage (pictograms and local language indications) and awareness-raising activities in schools and public spaces to inform communities of risks associated with installations (e.g. prevention of trespassing and/or makeshift connections attempts, etc.) and of the safe usage of electricity domestically.</p> | <p>Project Manager</p> |
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| 9 | <p>Community health and safety risks due to construction of the pilot minigrids and relevant infrastructure and new economic activities subsequent from productive use of the energy</p> | <p>Social and Environmental - Community Health, Safety and Security</p> | <p>I = 3, L = 2 (moderate)</p> | <p>The pilot minigrid (Outputs 2.1 and 2.3) will incorporate SES criteria during the site selection process and adopt the list of exclusion criteria that is found in the ESMF. After selection and before commencement of the pilot activity, the pilot minigrid will undergo a scoped ESIA or target assessment that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific Environmental and Social Management Plan (ESMP), which shall include a Pollution Prevention and Management Plan and a Traffic Management Plan. Details of this process can be found in the ESMF.</p> | <p>Project Manager</p> |
| 10 | <p>Risk on community health, safety and/or security due to the influx of people, mainly project workers and other newcomers subsequent to the new economic activities resulting from the productive use of the energy.</p> <p>New activities in the project's area of influence may attract newcomers affecting community health, safety and/or security as this new influx of people, expected to be mainly men, may interact with the local residents and/or involve the alteration of the normal functioning of the community leading to new diseases and/or gender safety concerns.</p> | <p>Social and Environmental - Community Health, Safety and Security</p> | <p>I = 3, L = 3 (moderate)</p> | <p>The pilot minigrid (Outputs 2.1 and 2.3) will undergo a scoped ESIA that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF. Contractors including any security personnel shall abide to UNDP's Standards of Conduct and apply best practices at all times.</p> <p>The project GRM will provide a means for affected community to report on any incidents that may occur as a result of this risk.</p> | <p>Project Manager</p> |

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| 11 | <p>Physical or economic displacement and loss of livelihood due to eviction from land on which pilot minigrids may be installed.</p> <p>All minigrids involve the construction of new infrastructure. New built structures occupy land, and access to the area may be restricted. Expected impacts include the displacement of existing legal or illegal inhabitants to allow the new structures to be built. However, as the only pilot that will be selected will involve rehabilitation of an existing MG, this risk is expected to be Low.</p> | <p>Social and Environmental - Resettlement and Displacement</p> | <p>I = 2, L = 1 (low)</p> | <p>The pilot minigrid (Outputs 2.1 and 2.3) will incorporate SES criteria during the site selection process and adopt the list of exclusion criteria that is found in the ESMF.</p> <p>Before commencement, the pilot minigrid will undergo a scoped ESIA or targeted assessment that will analyze these risks. Mitigation measures will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF.</p> | <p>Project Manager</p> |
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| 12 | <p>Loss of income for fuel sellers once pilot minigrids are operational.</p> <p>Traditional fuels supplied by local providers, including those from the informal/traditional sectors see their market diminished. Some mini-grid systems and project appliances to be implemented may replace an activity that was fueled with other energy sources such as diesel, charcoal and fuelwood. The decrease in fuel demand will lead to the loss of income for fuel suppliers, some of whom may be vulnerable people working in the informal market. Due to the fact that the pilot site has not yet been selected, the likelihood of this risk is not known but is not expected to be significant.</p> | Social and Environmental - Human Rights | I = 3, L = 3 (moderate) | Pilot minigrids (Outputs 2.1 and 2.3) will each undergo a scoped ESIA or targeted assessment that will analyze this risk. Mitigation measures will then be adopted as described in the pursuant site-specific ESMP. Details of this process can be found in the ESMF. | Project Manager |
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| 13 | <p>Working conditions not in line with national and international standards (by contractor or other entities involved in the project)</p> <p>All stages of the pilot minigrids will require labor, some of which may be sourced to unskilled/manual laborers who could be less familiar with the type of installations considered for this project and the concomitant occupational health and safety requirements and risks. Maintenance of the right-of-way and bush-clearing under transmission lines by manual labor is especially relevant in this context. This may lead to the use of child, forced, discriminatory, under-minimum practices and/or occupational health and safety accidents/incidents.</p> | <p>Social and Environmental - Labor and Working Conditions</p> | <p>I = 4, L = 2 (moderate)</p> | <p>For each pilot minigrid (Outputs 2.1 and 2.3), Labor Management Procedures and an Occupational Health and Safety Plan will be prepared and applied for the project to ensure labor standards and rights are upheld for project workers.</p> <p>In addition, the ESIA or targeted assessment will assess the likelihood of this risk and prevalence of child labor within the energy sector in the target area and propose measures to reduce it and find working persons under the age of 18 perform tasks appropriate to their age.</p> <p>Awarded project developers will be required to certify that the production and supply chain of used hardware, including PV panels, batteries and other electronic devices, abides to applicable international standards and best practices, included those targeting the prevention of forced and/or child labor as well as other forms of exploitation.</p> | <p>Project Manager</p> |
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| 14 | <p>Generation of hazardous waste (specifically e-waste) from the pilot minigrids that have been installed.</p> <p>While minigrids are small-scale technology, construction and maintenance involves the use of minor amounts of chemicals (paints, solvents, cleaning liquids, solder). Montreal Protocol chemicals can be present in appliances power by minigrids (i.e., cooling equipment). Persistent organic pollutants will not be used under this project. However, proper work procedures and equipment handling are sufficient measures to prevent releases into the environment.</p> <p>In addition, modest amounts of waste will be generated during construction (ground movement and concrete residues); electric wiring and insulator ends; broken or rejected parts and components. It is important to note that waste management in Benin is making progress, trying to eliminate open dumps, collect and transfer waste to specific spaces for treatment and revalorization</p> <p>Operation of minigrids will lead to the generation of different types of waste, in particular electronic waste (?e-waste?) in the form of</p> | <p>Social and Environmental - Biodiversity Conservation and Natural Resource Management; Pollution Prevention and Resource Efficiency</p> | <p>I = 3, L = 3 (moderate)</p> | <p>This risk will be assessed in the ESIA or targeted assessment that will be undertaken for each pilot minigrid (Outputs 2.1 and 2.3), such that the ESMP will include a Waste Management Plan detailing the procedures for disposal of all types of waste associated with construction and operation of the pilot minigrids. The plan shall hook on and implement already-existing closed chains with Extended Supplier Responsibility. It is worth noting that according to Law, MG concessionaires after finalization should restore sites to their original conditions.</p> | <p>Project Manager</p> |
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| DREI Risk Categories | | | | | |
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| 1 | <p>Energy market risk.</p> <p>Key challenges or Benin's electricity sector include: (i) weak public expenditure linked to Benin's position as an LDC; (ii) low purchase capacity affecting customers' capacity to pay for electricity service; (iii) nascent industrial sector including agri-processing; (iv) large unserved/underserved territory where national grid expansion is not economically feasible; and (v) insufficient collateral and/or guarantee schemes to secure (private) investment beyond electricity generation (IPP). By consequence, capital investments require careful planning and scenario analysis to ensure economic viability and reduce risks.</p> <p>All equipment used in Benin shall be compliant with technical standards. This is work in progress, although current projects will follow international standards. Household appliances on the market are often from informal imports and may not meet applicable standards, and may lead to consumer dissatisfaction and safety issues.</p> | Strategic, Political, Regulatory | I = 3; L = 2 (moderate) | The Project will apply the DREI framework to support the national dialogue and provide specific recommendations for derisking policy. Data collected by the AMP can help defining financial and technical parameters for minigrid concessions and contracts. The Project will further contribute to the definition and adoption of technical standards for minigrid equipment and installations. | Project Manager |

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| 2 | <p>Social Acceptance risk</p> <p>Many people in Benin are aware of minigrids and RE technologies. Projects including PANA Energie aim to ensure operational feasibility of distributed RE technologies and promote market uptake. Previous programs led by Government have increased awareness of the minigrid solution for off-grid electrification.</p> <p>However, performance issues have caused some households to seek alternative solutions such as gasoline generator or PV panels for self-supply (while others fell back to kerosene and batteries). Confidence in the minigrid model therefore has to be lifted again in these communities.</p> <p>Surveys are needed to determine people's willingness to pay, price elasticity, and acceptable tariff levels. Detailed studies and recommendations can help minigrid developers to prepare financially feasible proposals for concession.</p> | <p>Social and Environmental</p> | <p>I = 3; L = 2 (moderate)</p> | <p>The AMP pilot is aimed at demonstrating the technical and financial performance of minigrids in Benin, define the conditions for sustainability and boost trust among all stakeholders including end-users.</p> | <p>Project Manager</p> |
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| 3 | <p>Hardware Risk</p> <p>Earlier minigrids have been identified which are in a deteriorated state and underperform, the causes thereof not being clarified. Caution is therefore needed to ensure long-term technical sustainability.</p> | <p>Other (technical)</p> | <p>I = 4; L = 3 (substantial)</p> | <p>Although technically proven, procurement of minigrid equipment and installation, as other capital goods, shall consider warranties against defects, malfunctioning and underperformance to defer those risks that cannot or should not be borne by the operator. Approaches include extended warranties, service contracting, engineering, procurement and construction (EPC).</p> | <p>Project Manager</p> |
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| 4 | <p>Digital Risk</p> <p>There exists a risk that electricity sector entities would not be able to take full benefit of digital solutions or that systems would not be continued post-project. Gaps at the beneficiary level may impede achieving the potential impact of digital technologies.</p> <p>Digital technologies and telecommunication are governed by the <i>Minist?re de l'Economie Num?rique et de la Digitalisation (MEND)</i>, which seeks to increase equitable and inclusive access to communication services to all people and businesses. Most people can use text (SMS) communication protocols, for example to access market information, or transmit system status data. Sector policies have been developed, for example in the field of e-agriculture including the implementation of digital platforms managing sector data and agents. Notably, e-agriculture is viewed by public and private sector as a gamechanger for developing Benin's agricultural potential.</p> <p>As the framework and procedures for digital tendering and monitoring of minigrids are not fully developed in Benin, project partners need to become familiar with</p> | Strategic | I = 3; L = 2 (moderate) | <p>At GOB (IP) level the Project will carry out an assessment of the business processes related to the scope of the Digital Platform as a basis for functional specification. It will further assess the current digital infrastructure to propose a solution that is adequate and cost-effective, and can be maintained post-project (sustainability).</p> <p>In the pilot area, the Project will assess current uses of digital (telecom) services and seek synergies for expanding their use with minigrid electricity acting as an enabling technology.</p> <p>Training in the use of digital systems is considered to maximize proficiency by all beneficiaries.</p> | Project Manager |
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| 5 | <p>Labor Risk</p> <p>Operation and maintenance of minigrid systems requires fast responses to maintain service standards. Earlier minigrids under public programmes experienced difficulties to keep the systems up and running, probably due to a combination of factors including insufficient technical skills, lack of supplies and spare parts, and insufficient institutional back-up (including funding constraints).</p> <p>Professional skills including background knowledge and proficiency with O&M of minigrids need to be maintained and updated regularly; similarly, management skills and competences need to be adequate to meet the challenges faced by minigrid operators. Contract terms require minigrid concessionaires to have a local representative; it may prove challenging to find such person.</p> | Organizational | I = 3; L = 2 (moderate) | <p>RE projects must be executed by certified staff according to the Electricity Law. In addition, the Project's ESMF shall be adhered to as a safeguard to ensure professional quality and controlling labor risks to the extent possible.</p> <p>Complementary to baseline initiatives into this direction, the Project will further engage with vocational training institutes and programmes to foster curriculum development and professional certification.</p> | Project Manager |
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| 6 | <p>Developer Risk</p> <p>Government has limited experience with tendering of private minigrid concessions. Systemic challenges include: (i) public sector budget and capacity constraints which pose at risk consolidation of know-how and expertise within the public sector (ABERME); (ii) transparency to assure of tender process quality; and (iii) limited experience and procedures for monitoring of performance-based contracts.</p> <p>Automatization of the tendering process by means of digital technologies can help reduce the administrative burden on incumbent authorities, while improving transparency and accountability.</p> <p>Since income levels in rural Benin are lower than in some other AMP countries, operators may face lower revenue streams at a similar CAPEX and OPEX level. A local anchor tenant can improve financial sustainability and subsidize other consumers during MG growth phase; however, such larger consumers are not widespread in rural Benin.</p> <p>The ownership risk under the concession model appears well controlled. All assets are depreciated</p> | Strategic | I = 4; L = 3 (substantial) | <p>Activity:</p> <p>The business model for minigrid concessionaires in Benin is typical for the AMP. As the delivery model for minigrids in Benin is clearly defined, the main problem for project developers is financial sustainability. Careful system design, including a modular approach, cost-saving measures and PUE can help reduce financial exposure.</p> <p>A second potential risk concerns delays in project development and permitting processes, which may deter investors. The AMP aims to improve tendering, permitting and monitoring processes by enhancing GOB capacities including through digital solutions. Experience with private minigrids in Benin is currently being gained with funding from the MCA Benin-II and the SEforAll UEF. As such, the developer risk can be closely monitored over the next years and experiences incorporated into DREI analyses and resulting mitigation activities</p> | Project Manager |
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| 7 | <p>End-user Credit Risk</p> <p>Many people in rural areas are not credit-worthy as a result of poor purchase capacity and absence of collateral. However, they may wish to acquire electric appliances.</p> <p>Credit lines from commercial banks are available in the country. There are no tools in place to assess end-users' ability to pay for electricity services and required appliances (such as credit score cards).</p> | Financial | I = 2; L = 3 (moderate) | <p>Prepaid meters and SMS payment tools can be used to avoid end-user credit risks. The house wiring, according to a specified user profile, shall be included in the connection. Promising opportunities to boost economic development in communities and leverage customers' money for new services and appliances, can be obtained from synergies between PAYG minigrids and telecom operators. The Project seeks to engage with partners to accelerate the uptake of smart payment solutions.</p> <p>In addition, the Project will provide training to domestic financial institutions enabling them to serve rural customers.</p> | Project Manager |
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| 8 | <p>Financing Risk</p> <p>Low payment capacity in many communities will create challenges for minigrid investors to transit the "valley of death" and become financially sustainable. Private minigrids have just started to build a track record in Benin. This may translate into a high perceived risk concerning the technical performance and the business model.</p> <p>National financial institutions are not prepared to approve loans to private minigrid developers. Project proposals submitted in recent years recurred to international financiers and programs, not to the local bank sector. Government spending is backed up by multilateral and bilateral development banks and funds.</p> | Financial | I = 4; L = 1 (low) | <p>The Project will assess this risk in more detail through the DREI analysis. As tariffs will be subsidized to cover operational costs and allow for a profit margin, a financial mechanism must be in place to ensure long-term payment thereby reducing investors' risks.</p> <p>Given the large presence of multilateral financiers in the sector (MCA, AfDB, SEforALL), the Project will foster a dialogue to establish such mechanism.</p> | Project Manager |
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| 9 | <p>Currency Risk</p> <p>The national currency in Benin is the African Financial Community Franc (FCFA). In use in the UEMOA, it is pegged to the Euro (1 FCFA = 0.0015 EUR). As such the exchange rate risk is the same as for USD (GEF grant currency) to EUR. Under normal market conditions, the UEMOA would not like devalue the FCFA during the Project's time horizon and the lifetime of energy assets. Yet, the weakening of the EUR to USD exchange rate due to the war between Russia and Ukraine may induce EUMOA to reconsider its policy.</p> <p>The country is relatively stable and responsive to the recommendations issued by its multilateral partners. Security issues have recently appeared including government overthrows in Burkina Faso (2022) and in Mali (2021), and incursions from violent groups into the north of Benin. Security aspects may affect the deployment of AMP activities in the northern part of the country. They may also deter private companies from investing and give rise to a risk premium on capital.</p> | Financial | I = 3, L = 2 (moderate) | <p>No mitigation measures are proposed.</p> <p>UNDP and the IP will permanently monitor the situation to protect assets and people</p> | Project Manager |
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| 10 | <p>Sovereign Risk</p> <p>Benin's systemic trade deficit is the result of the country's dependence on imports for energy needs and high value-added goods. Moreover, Benin's exports of agricultural products such as cotton and maize are highly vulnerable to the weather and price fluctuations. The economy is also affected by the COVID-19 pandemic and the higher living costs resulting from the war in Russia-Ukraine. This condition undermines Benin's ability to take loans to finance additional debt.</p> <p>The sovereign risk is mitigated by the international lending community. Benin has accessed the IMF's Extended Fund Facility (EFF) and the Extended Credit Facility (ECF) with a financial package to the tune of nearly US\$650 million. Without such support, public expenditures in Benin could not be continued.</p> | Financial | I = 4, L = 3 (substantial) | No direct mitigation measures are proposed. | Project Manager |
| Other Risks to Project Success and Mitigation Measures | | | | | |
| | (none) | | | | |

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

85. (Prodoc ?135-?151) The Project will be implemented following UNDP's National Implementation Modality (NIM). The Implementing Partner (IP) for this project is the Directorate-General for Energy Resources (DGRE). The IP is a directorate of the Ministry of Energy (ME). The Ministry will assign the National Project Director (NPD) who holds ownership as the Executive of the Project.

86. A dedicated Project Management Unit (PMU) will be established and hosted by DGRE. The PMU will consist of the Project Manager (PM) who will combine a technical role, contributing to the project outcomes, with the project management function. The PMU will further include a part-time Finance and Administrative Officer (FA) and a Procurement Specialist (PA). Specific technical expertise is provided through one or more technical advisors (ideally shortlisted or vetted by the AMP Regional Project). This position (indicated as by the placeholder Technical Advisor, TA) will work in a tandem with the PM. The PMU, assisted by the TA will: (i) define terms of reference for consultancies, services and goods to be procured under the Project, for submission to the Project Steering Committee (PSC); (ii) supervise contracted services and consultancies; (iii) manage and monitor the Project on a day-to-day basis; and (iv) report to the PSC and UNDP. Note that project activities of a technological nature, (specifically minigrid pilot design, technical standards and digital systems) will be supported by a Project Engineer (PE) hired by the Project.

87. The Project Steering Committee (PSC) will serve as the Project's decision-making body. It will meet according to necessity, at least twice each year. The PSC will provide strategic guidance to the PMU including corrective action if needed to ensure the Project achieves the desired results. The PSC will comprise the following members: (1) Ministry of Energy (ME), as the Executive of the Project; (2) UNDP in its role as Development Partner and GEF Agency; (3) DGRE, as the Implementing Partner for day-to-day operation; other members are: (4) *Ministere du Cadre de Vie et de D?veloppement Durable (MCVDD)*; and (5) *Association National des Communes du B?nin (ANCB)*. The PM will act as the convener of PSC meetings on behalf of the IP.

Planned coordination with other relevant GEF-financed projects and other initiatives.

88. The Project will be coordinated with the following GEF-funded and other initiatives:

89. (1) The UNDP/GEF-5 multifocal area Project "Promotion of Sustainable Biomass-based Electricity Generation in Benin" (GEF ID 5752) implemented by the (former) Ministry of Energy and Water and the Ministry of Environment, with a GEF budget of US\$ 3,872,602). (2) The UNDP/LCDF Project "Strengthening the Resilience of the Energy Sector in Benin to the Impacts of Climate Change", (GEF ID 5431; GEF budget US\$8,000,000) implemented by the General Directorate for Energy (DGRE). Both projects are currently under implementation. Coordination is ensured as these projects are under the same Executing Agency (DGRE). With a view on sector GHG emission monitoring, the FAO/GEF-7 Project "Strengthening capacity in the energy, agriculture, forestry and other land-use sectors for enhanced transparency in the implementation and monitoring of Benin's Nationally Determined Contribution" (GEF ID 10156; GEF budget USD1,319,863) appears relevant. The Executing Agency is the *Minist?re du Cadre de Vie et du D?veloppement Durable (MCVDD)*, which is invited to take seat in the AMP Benin Project Steering Committee.

90. Specific coordination is envisioned with the SEforAll/GIZ UEF in relation to the definition of performance milestones for result-based payments schemes, and for the design of the Digital Platform.

Given MCA's technical assistance to the sector, involvement of ME important to coordinate between DGRE and ABERME. The AMP Project can play an important role here to provide continuity to the off-grid agenda as MCA Benin ? II is expected to close in 2023. The World Bank BAES Project "Benin Electricity Access Scale-up" (P173749; IDA Credit US\$200M) is relevant as it pursues electricity supply to households, public institutions, and SME. The Project comprises technical assistance to the ME.

91. Benin's development partners in the energy sector engage regularly through existing platforms including SE4All. The AMP Regional Project and the proposed minigrid dialogue (Output 1.1) provide an additional entry point for UNDP and GOB to shape a roadmap and set priorities, notably in the domain of policy, regulation, access to finance and incentives. Monitoring of the advances towards Derisking of RE Investments (DREI, output 1.2) in Benin and for the AMP as a whole, will enable UNDP to help shaping a comprehensive financing mechanism for minigrids in dialogue with national governments and the multilateral development banks in the region.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

92. (Prodoc, table ?12) The Project is aligned with (a) national development policies and plans including: *"Plan National de D?veloppement (PND) 2016-2025"*, *"Etudes Nationales de Perspectives ? Long Terme B?nin Alafia 2025"*, and the *"Programme d'Actions du Gouvernement ?B?nin r?v?l??" (PAG) 2021-2026*; (b) sector policies and plans: *"Politique Nationale de Maitrise d'Energie (PONAME) 2021-2030"*, *"La Politique Nationale du D?veloppement des Energies Renouvelables (PONADER) 2020 ? 2035"*, the *"Politique ?lectricit? Hors-Reseau (PEHR) 2018 ? 2035"* and the *"Plan Directeur d'?lectrification Hors R?seau (PDRHR) 2017"*; (c) climate change plans: the Updated Nationally Determined Contributions (NDC), (2021), and the Updated National Climate Change Adaptation Plan (PNA), 2022.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

93. Being part of the AMP Regional Project, Knowledge Management (KM) is mainstreamed into the Benin child project through several entry points. Capacity building and the exchange of knowledge and experiences with peer countries is a transversal aspect of the AMP, including by pooling of vetted consultants in the field of policy and finance, guidance by UNDP's AMP core staff, and a harmonized approach to digitalization and performance monitoring and progress reporting for the child projects and at the aggregated level.

94. The transversal approach to KM will notably benefit the following outputs through collective learning to tackle issues and problems that shared by the countries participating in the AMP: 1.2 ?DREI techno-economic analyses carried out?; 1.4 ?Domestication of quality standards for solar mini-grid components?; 3.1 ?Design support for a financial facility?; 4.1 ?Project digital strategy?; and 4.4 ?Engage with regional project?. As a result, the quality of identified solutions will be greatly enhanced while project resources can be applied more efficient- and effectively avoiding doubling of efforts. Specifically, outputs 1.2 and 4.4 provide budget for analytical work and travel expenses to enable participation in regional events.

95. Training and capacity building are present in all components. Specific outputs include: 1.3 ?Capacity building provided to public officials?; 2.3 ?Strengthening operator and community capacities?; 3.2 ?Domestic financial sector capacity-building?; and 4.2 ?Minigrids Digital Platform? (training on its configuration and operation). Knowledge creation and consistency throughout Project execution is further strengthened by the core Project team consisting of the Project Manager (PM) support by AMP international Technical Advisors (TA), complemented by the Project Engineer (PE) and the local DREI/Minigrid Expert (MG) supporting the preparation and implementation of the minigrid pilots.

96. The budget directly associated to KM is of the order of US\$ 192,000 (US\$ 60,000 Output 1.2; US\$ 25,000 Output 1.3; US\$ 107,000 Outputs 4.1-4.4 excluding ICT hardware costs). As presented in Prodoc, Annex 4, Outputs 1.2 and 4.1 are programmed for completion in Project Year 1; Outputs 4.2 and 4.3 will start in Year 2, while Output 4.4 concerns periodic events (indicatively one AMP peer event per year).

9. Monitoring and Evaluation

Describe the budgeted M and E plan

97. Project monitoring and evaluation (M&E) are conducted in accordance with established UNDP and GEF procedures. The M&E activities are defined by Project Component 5. Note that UNDP's ESMF and gender safeguards are covered under output 1.5. The concrete activities for M&E that are specified and budgeted in the M&E plan (please refer to the table below). Monitoring will be based on the indicators defined in the Results Framework and as further detailed in the Monitoring Plan (table Prodoc, p.62-69), which indicates the means of verification. The GEF Core indicators (Prodoc, Annex 16) will be used to report the attained GHG benefits. Importantly, the Implementing Partner and the Project team are responsible for updating the indicator status for reporting to the GEF. The End-of-Project data should be shared with TE consultants prior to required evaluation missions according the M&E Plan. Intermediate measurements of progress can be recorded and shared through the GEF Portal.

98. UNDP as the GEF Implementing Agency will involve the GEF Operational Focal Point in Benin and its project partners during all stages of M&E activities to ensure that the findings are used for further planning and implementation. According to the Monitoring and Evaluation policy of the GEF and UNDP, follow-up studies like country portfolio evaluations and thematic evaluations can be initiated and conducted. All project partners and contractors are obliged to: (i) make available studies, reports or other documentation related to the Project; and (ii) facilitate interviews with staff involved in the Project's activities. Specific M&E activities such as oversight missions will be planned between the Implementing

Partner and UNDP CO, to be reflected in the Annual Work Plans. The M&E plan and estimated budget (US\$ 64,589 including travel) shall provide guidance to this purpose (see also tables Prodoc, p. 69-70).

| Monitoring and Evaluation Budget for project execution | | |
|---|-------------------------|---|
| GEF M&E requirements to be undertaken by Project Management Unit (PMU) | Indicative costs (US\$) | Time frame |
| Inception Workshop and Report | US\$ 11,000 | Inception Workshop, within 2 months of First Disbursement |
| M&E required to report on progress made in reaching GEF core indicators and project results included in the project results framework | N/A | Annually, prior to MTR, and prior to TE |
| Preparation of the annual GEF Project Implementation Report (PIR) | N/A | Annually, between June-August |
| Monitoring all risks (Atlas risk log) | N/A | On-going |
| Monitoring of stakeholder engagement plan | N/A | On-going |
| Monitoring of ESMF and specific management plans | N/A | Annually before PIR and as requested |
| Monitoring of Gender Action plan | N/A | Annually before PIR and as requested |
| Supervision missions | N/A | As needed |
| Learning missions | N/A | As needed |
| Independent Mid-term Review (MTR) | US\$ 21,589 | 1 March 2025 |
| Independent Terminal Evaluation (TE) | US\$ 32,000 | 1 February 2027 |
| TOTAL indicative COST | US\$ 64,589 | |

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCAF/SCCF)?

99. (Prodoc ?105-?106) The Project will deliver social, economic and environmental benefits as a result of the envisioned technical assistance activities and the proposed minigrids pilots, which directly contributed to SDG-7 (affordable and clean energy); and SDG-12 (climate action). These include: (a) direct energy savings (MWh) from replaced fossil fuel-based electricity suppliers under the business as usual scenario and associated costs savings (USD); (b) reduced emissions of greenhouse gases (GHG) from

fossil sources (diesel); and Other Atmospheric Contaminants (OACs) from fossil fuels and traditional biomass (fuelwood and charcoal) in indoor spaces, which relieves public health risks associated with baseline emissions; (c) development of innovative businesses contributing to economic growth and job creation; (d) enhanced quality and user experiences for household and business minigridd end-users; and (e) social and human capital development.

100. Aspects such as impact on public health and business, employment and national income generation will expectedly be assessed through the AMP's Communities of Practice, as inputs for the national policy. A direct metric for economic benefits is obtained from the avoided costs of imported fossil fuels for electricity generation. Assessments shall differentiate according to gender, income level or business type.

101. For rural and currently unserved population, electric lighting and appliances create time-flexibility enabling people to deploy more income-generating activities during the day while additional opportunities may be created in evening hours. Electricity also contributes to building human and social capital by facilitating children to do homework after sunset; equally youngsters and adults can take benefit to acquire new skills; women in particular can benefit if electricity effectively reduces care-taking and household chores which traditionally rely on them. Electricity is further an enabler for accessing information both for leisure and commercial purposes, including access to market data for local produce, public information campaigns related to health, disaster prevention, awareness about protection of the local environment and natural resource base, and more. Access to information can help empower rural people to become full citizens and have their voices and needs reflected in public policies and plans. As such, the Project indirectly contributes to sustainable development in Benin, specifically as reflected by SDG-1 (no poverty), SDG-3 (health and well-being); SDG-4 (quality education); SDG-5 (gender equity); SDG-6 (clean water and sanitation); and SDG-8 (decent work and economic growth).[1]984.

102. The lifetime greenhouse gas (GHG) emission reduction from project activities is estimated at approx. 9,000 metric tons of carbon dioxide equivalent (tCO₂eq) (direct) and 180,000 tCO₂eq (indirect). The number of direct beneficiaries is estimated at 12,000 people, of which at least 50% are women, as a result of 2,400 new and/or improved minigridd connections.

[1] For the current status of Benin in relation to the attainment of the SDGs, please refer to: <https://dashboards.sdindex.org/profiles/benin>

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

| | | | |
|------------|--|------------|-----------|
| PIF | CEO Endorsement/Approva I | MTR | TE |
|------------|--|------------|-----------|

| |
|----------------------------|
| High or Substantial |
|----------------------------|

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Supporting Documents

Upload available ESS supporting documents.

| Title | Module | Submitted |
|---|----------------------------|-----------|
| Annex 9_ESMF for Four UNDP AMP National Projects-Round 2- 07 09 2022 | CEO Endorsement ESS | |
| AMP Benin ANNEX 5_SESP-08 08-2022_rev_rr lb_rr lb | CEO Endorsement ESS | |

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

| | | | | |
|--|---|--|------------------------|---|
| <p>This project will contribute to the following Sustainable Development Goal (s):</p> <ul style="list-style-type: none"> ? SDG7: Ensure access to affordable, reliable, sustainable and modern energy for all <ul style="list-style-type: none"> o SDG 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services o SDG 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix ? SDG13: Take urgent action to combat climate change and its impacts; ? SDG5: Achieve gender equality and empower all women and girls. | | | | |
| <p>This project will contribute to the following country outcome (UNDAF[1]/CPD[2], RPD[3]):</p> <p>UNDAF outcome 1: By 2023, Benin's population, especially the most vulnerable, are more resilient and have a better quality of life through access to decent employment, food and nutrition security, clean energy, and the sustainable management of natural resources, the adverse effects of climate change, crises and disasters.</p> <p>CPD Output 1.3: Solutions adopted for rural and urban populations to achieve access to clean, affordable and sustainable energy.</p> | | | | |
| | Objective and Outcome Indicators | Baseline | Mid-term Target | End of Project Target |
| Project Objective: | To support access to clean energy by increasing technical and financial feasibility and by promoting scaled-up commercial investment, in low-carbon minigrids in Benin, with a focus on cost-reduction levers and innovative business models. | | | |
| | <p>Indicator 1: Greenhouse gas emissions mitigated</p> <p>Unit of measure: metric tons of carbon dioxide equivalent (tCO2e)</p> | <p>0 tCO2e</p> <p>(Project has not started)</p> | <p>0 tCO2e</p> | <p>Direct: 9,056 tCO2e</p> <p>Indirect: 179,273 tCO2e</p> |
| | <p>Indicator 2: Number of direct beneficiaries benefitting from energy access via minigrids, disaggregated by gender and by customer segment (residential, social, commercial/productive use) as co-benefit of GEF investment</p> <p>Unit of measure: number of people</p> | <p>0 people</p> <p>(Project has not started)</p> | <p>0 people</p> | <p>12,152 people (of which 50% women)</p> <p>-----</p> <p>12,000 people (residential)</p> <p>32 people (social)</p> <p>120 people (commercial/PUE)</p> <p>12,152 people (total)</p> |

| | | | | |
|--|---|---|---|--|
| | <p>Indicator 3: Increase in installed solar PV capacity and battery storage</p> <p><i>Units of measure: MW (solar PV); MWh (battery storage)</i></p> | <p>0 MW solar PV 0 MWh (battery)</p> <p>(Project has not started)</p> | <p>0 MW solar PV 0 MWh (battery)</p> | <p>Solar PV: 0.368 MW Battery storage: 0.892 MWh</p> |
| | <p>Indicator 4: Local residents trained in different aspects of minigrid development and operation (e.g. sales, distribution, operations, management) disaggregated by gender.</p> <p>Unit of measure: number of people</p> | <p>0 people</p> <p>(Project has not started)</p> | <p>Female: 15 [people] Male: 15 [people] Total: 30 [people]</p> | <p>Female: 30 [people] Male: 30 [people] Total: 60 [people]</p> |
| Project Component 1 | Policy and Regulation | | | |
| <p>Outcome 1. Stakeholder ownership in a national minigrid delivery model is advanced, and appropriate policies and regulations are adopted to facilitate investment in low-carbon minigrids.</p> | <p>Indicator 5: A minigrid delivery model to enable minigrid development is endorsed/adopted by the national government through a consultative process involving key stakeholders (e.g. relevant ministries, local authorities, rural populations, private sector, media, etc.)</p> <p>Unit of measure: binary (1/0)</p> | <p>0</p> <p>(Project has not started)</p> | <p>0</p> <p>(Multi-stakeholder, national dialogue platform on minigrid delivery models established and active.)</p> | <p>1</p> <p>(At least one minigrid delivery model is identified and endorsed by the government through the work of the multi-stakeholder platform and dialogue.)</p> |

| | | | | |
|--|--|--|---|---|
| | <p>Indicator 6: Number of policy derisking instruments for minigrad investments - whose development has been supported by the project - are endorsed/adopted by the national government</p> <p>Unit of measure: Number of policy derisking instruments</p> | 0 (no rural/off-grid electrification policy in place) | 1 policy derisking instrument(s) adopted The specific instruments will be informed by the full DREI analysis | 3 policy derisking instrument(s) adopted The specific instruments will be informed by the full DREI analysis |
| Outputs to achieve Outcome 1 | <p>Output 1.1. An inclusive national dialogue to identify minigrad delivery models is facilitated, clarifying priority interventions for an integrated approach to off-grid electrification.</p> <p>Output 1.2. Minigrad DREI techno-economic analyses carried out to propose most cost-effective basket of policy and financial de-risking instruments and contribute to AMP Flagship Report on Cost Reduction.</p> <p>Output 1.3. Capacity building provided to public officials (regulator, ministries) specifically to design procurement/tender processes that incorporate cost-reduction levers and innovative business models.</p> <p>Output 1.4. Domestication of quality standards for solar mini-grid components, and institutional capacity of national standards organizations/bureau strengthened.</p> <p>Output 1.5. Support provided to establish the environmental and social policies and plans to ensure mini-grid risks are properly handled.</p> | | | |
| Project Component 2 | Business model innovation with private sector. | | | |
| Outcome 2. Innovative business models based on cost reduction operationalized, with strengthened private sector participation in low-carbon/renewable energy minigrad development | <p>Indicator 7: Minigrad pilots implemented that demonstrate a delivery model, cost-reduction measure(s) and/or productive use of electricity</p> <p>Unit of measure: binary (1/0)</p> | 0 (Project has not started) | 1 Minigrad Pilot Plan for advancing the minigrad pilots is developed, and cleared by UNDP and the Project Board. (1) Any project tendering process, as applicable, for minigrad pilots is launched. (1) | 1 The Minigrad Pilot Plan has been successfully executed and the pilots are delivered, operational, and being monitored. (1) |

| | | | | |
|--|---|---|---|--|
| | <p>Indicator 8: Capacity of minigrid developers and/or operators is enhanced to implement innovative business models and incorporate cost-reduction levers in minigrid projects.</p> <p>Unit of measure: binary (1/0)</p> | <p>0</p> <p>(The Project shall assess the baseline in Year 1)</p> | <p>1</p> <p>Planned capacity building activities for year 1 and 2 are implemented. (1)</p> <p>The capacity of targeted recipients is assessed by survey towards the end of year 2. On a scale of 1 to 5, an average score of at least 2 is achieved.</p> <p>- 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)</p> | <p>1</p> <p>Planned capacity building activities for year 3 and 4 are implemented. (1)</p> <p>The capacity of targeted recipients is assessed by survey towards the end of the project. On a scale of 1 to 5, an average score of at least 4 is achieved.</p> <p>- 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)</p> |
| <p>Outputs to achieve Outcome 2</p> | <p>Output 2.1. Pilots developed, including on productive use and innovative appliances and modular hardware and system design, leading to cost-reduction in minigrids.</p> <p>Output 2.2. Commissioning and monitoring of selected pilots in alignment with AMP principles.</p> <p>Output 2.3. Enhancement of minigrid business model by strengthening operator and community capacities, development of PUE and other energy nexus, and the integration of local RE sources.</p> | | | |
| <p>Project Component 3</p> | <p>Scaled-up financing</p> | | | |

| | | | | |
|--|---|---|---|--|
| <p>Outcome 3. Financial sector actors are ready to invest in a pipeline of low-carbon minigrids and concessional financial mechanisms are in place to incentivize scaled-up investment.</p> | <p>Indicator 9: Capacity of financial institutions is enhanced through training, knowledge sharing, and/or awareness raising events aimed at increasing the financial sector's capacity to evaluate investments in minigrids.</p> <p>Unit of measure: binary (1/0)</p> | <p>0</p> <p>(The Project shall assess the baseline in Year 1)</p> | <p>1</p> <p>Planned capacity building activities for year 1 and 2 are implemented. (1)</p> <p>The capacity of targeted recipients is assessed by survey towards the end of year 2. On a scale of 1 to 5, an average score of at least 2 is achieved.</p> <p>- 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)</p> | <p>1</p> <p>Planned capacity building activities for year 3 and 4 are implemented. (1)</p> <p>The capacity of targeted recipients is assessed by survey towards the end of the project. On a scale of 1 to 5, an average score of at least 4 is achieved.</p> <p>- 1 represents a low level of capacity - 5 represents a strong capacity to understand relevant issues and apply knowledge and skills to find effective solutions. (1)</p> |
| | <p>Indicator 10: Number of government- or impact investor-supported financing mechanisms offering concessional finance for low-carbon minigrids.</p> <p>Units of measure: binary (1/0)</p> | <p>0</p> <p>(No financing mechanism in place)</p> | <p>1</p> <p>At least one complementary funding instrument is designed and operational. (1)</p> | <p>1</p> <p>At least one complementary funding instrument is designed and operational. (1)</p> |
| <p>Outputs to achieve Outcome 3</p> | <p>Output 3.1. Innovative financing solutions for minigrid development are identified and implemented with supporting human and institutional strengthening.</p> <p>Output 3.2. Domestic financial sector capacity-building on business and financing models for minigrids.</p> | | | |
| <p>Project Component 4</p> | <p>Digital and Knowledge Management.</p> | | | |

| | | | | |
|---|--|------------------------------------|--|---|
| Outcome 4. Digitalization and data mainstreamed, across stakeholders, into local minigrid market development. Increased knowledge, awareness and network opportunities in the minigrid market and among stakeholders, including benefiting from linkages to international good practice. | Indicator 11: A project digital strategy is prepared and implemented by the PMU to contribute to project implementation and local minigrid market development. Units of measure: binary (1/0) | 0 (Project has not started) | 1 The project digital strategy is developed and being implemented (1) | 1 The project digital strategy is implemented. (1) Recommendations for rolling out digital solutions for minigrids at national level have been shared with key national stakeholders. (1) |
| | Indicator 12: Number of minigrid pilots sharing data on minigrid performance with the regional project and other stakeholders following best practices and received from the AMP Regional Project. Units of measure: binary (1/0) | 0 (Project has not started) | 1 The project's Minigrids Digital and Data Management Platform is procured and operational, ready for data collection from the project's mini-grid pilot(s), and for data sharing with the AMP regional project's digital platform. (1) | 1 100% of the planned minigrid pilots, as identified in the project's Minigrid Pilot Plan, are collecting and sharing data with the project's digital platform (1) |
| Outputs to achieve Outcome 4 | Output 4.1. A project digital strategy is developed and implemented, including linkages to and following guidance from the AMP Regional Project. Output 4.2. Specification and implementation of Minigrids Digital Platform to track minigrid pilots and support scale-up and cost-reduction. Output 4.3. Adoption and operationalization of the project's Quality Assurance and Monitoring Framework (QAMF). Output 4.4. Engage with regional project by participating in Communities of Practice and capturing and sharing of lessons learnt. | | | |
| Project Component 5 | Monitoring and Evaluation (M&E) | | | |
| Outcome 5. Ensuring compliance with all mandatory monitoring and reporting requirements of the GEF. | | | | |

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|-------------------------------------|--|
| Outputs to achieve Outcome 5 | Output 5.1. Inception workshop is conducted and M&E plan is implemented. Output 5.2. Project Mid-Term Review is conducted. Output 5.3. GEF Terminal Evaluation is conducted. |
|-------------------------------------|--|

[1] United Nations Development Assistance Frameworks (UNDAF)

[2] Country Programme Document (CPD)

[3] Regional Programme Document (RPD)

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

| Council Member Comment | Response |
|--|--|
| France | |
| <p>This program targets the same topic and the same geographical areas as some AFD projects in Burkina Faso, Madagascar, Mali, and Niger.</p> <p>? Coordination with AFD would be necessary in the countries where AFD has projects on this theme (with links to the EU and other donors): Mali, Niger, Burkina Faso (Madagascar: project under preparation).</p> <p>There are some interesting points on data collection and on the capitalization of lessons learnt and practical experience</p> | <p>A key objective of AMP is to align and complement with the support of existing development actors in minigrids. AFD's activities in minigrids are well-noted, and AMP national projects will benefit from lessons learnt in countries where AFD has provided support.</p> |

| | |
|--|---|
| <p>The proposal covers countries in very different contexts, without an analysis of the specific situation and needs of each country. It is therefore a very wide range of subjects that are proposed to be tackled:</p> <p>? Technical assistance on regulations, tariffs, risk analysis, geospatial planning, techno-eco modeling, prefeasibility, formulation of rural electricity strategies, issues with subsidies of fossil fuel, derisking instruments, institutional reform, capacity building, quality standards, customs procedures, waste management, digitalization, professional training, design support, market intelligence, etc.</p> <p>? Investments: Development of pilots (especially on productive uses)</p> <p>Even if these different points are indeed subjects which require technical assistance and grant financing, the formulation of the project raises some questions: there does not seem to be any will. It would be relevant to analyze the successes and gaps of certain countries, for example the successes of Kenya on its regulations, in order to replicate the approach. It would also be necessary to identify relevant public actors in each country (utility vs rural electricity agency) as the approaches to recommend will be very different depending on the case.</p> | <p>The AMP's PFD includes a menu representing a wide-range of possible outputs that AMP national projects may select from. The early-stage concepts included in the PFD Addendum in turn reflected an initial selection of these outputs.</p> <p>It is noted that Benin's new Electricity Law 2020 reflects its vision on electricity supply in the country and defines the delivery model for off-grid electrification through private concessionaires which can build, own, and operate minigrids. AMP action in Benin is therefore focused on updated and complementing specific regulation (i.e. to bring decrees, resolutions, model contracts etc) in alignment with the new Law. AMP intervention also aims to improve effectiveness of regulation, to be reflected in reduced transaction costs for all stakeholders.</p> <p>In spite of low income levels of rural households, there is a strong market pull for electricity services in the country to which the minigrid sector aims to respond. Challenges include the tariff setting (from customer perspective as well as demanded return on investment for private operators), and ability of the service to meet local energy needs; noting that many energy services in the baseline are non-electric). Community engagement to promote electricity end-uses and adequately develop the various energy nexus is included in the project design and is expected to generate valuable lessons to support the market.</p> |
| <p>The funding is focused on a few countries: Benin with MCC and SE4All (total \$ 58M), Zambia (GCF and EU, \$ 53M), Mali (UNDP, SIDA: \$ 2.6M). Elsewhere, funding seems too small to induce the structural changes envisaged.</p> <p>? It seems difficult to imagine that such a program will be effective outside of the 3 countries with the most funding..</p> | <p>It is acknowledged that large lending programs for off-grid electrification are in place these countries, including the MCC/OCEF and the SeforAll/GIZ UEF in Benin. While these programs are advancing, the baseline analysis shows that barriers remain in place that can effectively be addressed through GEF incremental action. Specifically, the processes that are triggered under Benin's off-grid concession scheme need to become more expedite and capacities for purview and performance tracking of concessionaires need to be enhanced. Digital tools are expected to be a valuable asset to this purpose, especially with an rapidly expanding portfolio.</p> <p>Lessons and experiences in the leading countries will be used to finetune approaches in the countries with incipient markets.</p> |

| | |
|---|---|
| <p>Finally, the added value of UNDP on access to energy in rural areas, through mini-grids, should have been made more explicit in the selection of implementing agency</p> | <p>Each agency's selection as implementation agency is decided by the GEF OFF's. UNDP has a considerable historical track-record in supporting off-grid electrification, and through the AMP is currently GEF implementation agency to 19 countries on solar-battery mini-grids.</p> <p>In Benin, GOB's partnership with UNDP is long-standing, demonstrated for instance by the projects 'Promotion of Sustainable Biomass-based Electricity Generation in Benin' (GEF ID 5752) and 'Strengthening the Resilience of the Energy Sector in Benin to the Impacts of Climate Change'(GEF ID 5431). UNDP's involvement has contributed to the adoption of climate change adaptation and mitigation measures in national policies and plans, including the PDEHR, the National Electrification Plan (PNE), the National Renewable Energy Policy 2020-2035 (PONADER), the PONAME, and the Electricity Law.</p> |
| Germany | |
| <p>Germany approves the following PIF in the work program but asks that the following comments are taken into account:</p> <p>Suggestions for improvements to be made during the drafting of the final project proposal:</p> <p>? In order to avoid duplication of efforts and leverage synergies, Germany strongly recommends (to continue) coordinating with the following local country offices of GIZ during project preparation as well as implementation: Benin, Mali and Zambia.</p> | <p>A key objective of AMP is to align and complement with the support of existing development actors in minigrids.</p> <p>Coordination with GIZ has taken place during PIF and during the PPG phase (workshops and bilateral calls) and opportunities for complementary activities were explored.</p> |

**ANNEX C: Status of Utilization of Project Preparation Grant (PPG).
(Provide detailed funding amount of the PPG activities financing status
in the table below:**

| <i>Project Preparation Activities Implemented</i> | <i>GEF/LDCF/SCCF Amount (\$)</i> | | |
|--|----------------------------------|-----------------------------|-------------------------|
| | <i>Budgeted Amount</i> | <i>Amount Spent To date</i> | <i>Amount Committed</i> |
| <p>Preparatory Technical Studies & Reviews. Formulation of the UNDP-GEF Project Document, CEO Endorsement Request, and Mandatory, Project Specific Annexes,</p> <p><i>The project document package was prepared by a team of national and international consultants.</i></p> | 38,000 | 18,895.00 | 19,105 |
| <p>Validation Workshop and Report Delivery of final outputs</p> | 7,000 | 7000 | 0 |

| | | | |
|---|--------|-----------|--------|
| HACT assessment of the Implementing partner | 5,000 | 0 | 5,000 |
| Total | 50,000 | 25,895.00 | 24,105 |

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



ANNEX E: Project Budget Table

Please attach a project budget table.

| Expenditure Category | Detailed Description | Component (USDeq.) | Total (USD eq.) | Responsible Entity |
|----------------------|----------------------|--------------------|-----------------|--------------------|
|----------------------|----------------------|--------------------|-----------------|--------------------|

| y | | <i>Component 1</i> | <i>Component 2</i> | <i>Component 3</i> | <i>Component 4</i> | <i>Sub-Total</i> | <i>M&E</i> | <i>PMC</i> | | (Executing Entity receiving funds from the GEF Agency) [1] |
|------------------|--|--------------------|--------------------|--------------------|--------------------|------------------|----------------|------------|---------|---|
| Equipment | 1.559k\$ - Office furniture for PMU | | | | | - | | 1,558 | 1,558 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Equipment | 371k\$ (2.2) - Equipment minigrd pilots as per technical specifications (PV panels, racks, batteries, T&D infrastructure and ancillary systems). | | 371,000 | | | 371,000 | | | 371,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Equipment | 2k\$ - Three (3) laptops, printer and digital camera for PMU. | | | | | - | | 2,000 | 2,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |

| | | | | | | | | | |
|---|---|--|--|--|--------|--------|--------|--|--|
| Equipm ent | 82k\$ (4.2) ? Procurement of AMP Digital Platform including: (i) hardware and software and ancillary systems and devices; (ii) installation and configuration; (iii) initial training for end-users; and (iv) after-sales services and warranties as per specifications. | | | | 82,000 | 82,000 | | 82,000 | Directio n G?n?ral e des Ressour ces Energ?ti ques (DGRE - Ministry of Energy) |
| Contract ual services- Individu al | 31k\$ - Project Manager (PM) for project management activities, as per terms of reference.31k\$ - Project Finance and Administrative Officer (PA), as per Terms of Reference (4 years, 2/5 part- time).31k\$ - Project Procurement Specialist (PS), as per Terms of Reference (4 years, 2/5 part- time). | | | | - | 93,000 | 93,000 | Directio n G?n?ral e des Ressour ces Energ?ti ques (DGRE - Ministry of Energy) | |

| | | | | | | | | | |
|--|--|--|--|--------|--------|--|--|--------|---|
| Contractual services-Individual | 32k\$ (3.1: 24k\$; 3.2: 8k\$) - Project Manager (PM) for: (i) liaison with financial sector entities, development of workplans and participation in analytical work, promotion and communication events; (ii) drafting of Terms of Reference for consultancies; and (iii) quality assurance and overall supervision of contracted activities. | | | 32,000 | 32,000 | | | 32,000 | Direction G n ral e des Ressources Energ tiques (DGRE - Ministry of Energy) |
|--|--|--|--|--------|--------|--|--|--------|---|

| | | | | | | | | | |
|--|---|--|--|--|--------|--------|--|--------|---|
| Contractual services-Individual | 33k\$ (4.1: 6k\$; 4.3: 13k\$; 4.4: 14k\$) - Project Manager (PM) for: (i) lead of Digital Strategy drafting process including embedding in IP business context; (ii) drafting of Terms of Reference for consultancies; (iii) quality assurance and overall supervision of contracted activities; (iv) responsibility for QAMF implementation ; and (v) for participation in AMP Communities of Practice.15 k\$ (4.2) - Project Engineer (PE) for: (i) development of functional and technical specification for Digital Platform in coordination with international AMP digital expert and suppliers. | | | | 48,000 | 48,000 | | 48,000 | Direction G n ral des Ressources Energ tiques (DGRE - Ministry of Energy) |
|--|---|--|--|--|--------|--------|--|--------|---|

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| <p>Contractual services-Individual</p> | <p>52k\$ (2.1: 27k\$ - 2.2: 25k\$) Project Engineer (PE) for: (i) team leader for minigrid pilot design and implementation in collaboration; (ii) drafting of Minigrid Pilot Plan; (iii) TOR for contracted services (studies related to feasibility analysis and ESIA); (iv) functional specification of minigrid equipment and ancillary systems; (v) participation in procurement and supplier selection process; (vi) supervision of products, goods and services delivered by contractors; (vi) lead consultant for monitoring of pilots and analysis of operational data; (vii) identification of operational issues and initiation of remedial actions; (viii) identification of opportunities for enhancement and/or upscaling of the pilots; and (ix) progress reporting to Project Board.32k\$ (2.3) - Project Manager (PM) with responsibilities</p> | <p>84,000</p> | <p>84,000</p> | <p>0</p> | <p>84,000</p> | <p>Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy)</p> |
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| <p>Contractual services-Individual</p> | <p>54k\$ (1.1: 47k\$ - 1.3: 5k\$ - 1.5: 2k\$) - One minigrid policy expert (P3-level for 4-yr period) to assume the role of Project Manager (PM) with responsibilities including: (i) lead consultant to the Executive (ME); (ii) lead consultant on topics related to regulation, institutional capacity, finance; (iii) engagement with GOB stakeholders, market actors and CSOs; (iv) drafting of Terms of Reference for consultancies and procurement of services; (v) quality assurance and overall supervision of contracted activities; (vi) engagement with AMP Regional Project partners for peer review of proposals, analysis of project approaches, and participation in AMP events in Benin and abroad; and (vii) compilation of proposals and presentations to stakeholders. 18 k\$ (1.2: 10k\$ - 1.4: 8k\$) - One national expert to act as Project</p> | <p>72,000</p> | | | | <p>72,000</p> | | <p>72,000</p> | <p>Direction G?n?ral des Ressources Energ?tiques (DGRE - Ministry of Energy)</p> |
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| Contractual services-Company | 13k\$ (3.1) ? One contract with specialized firm or institute for design of proposal for innovative financing mechanisms for minigrids in Benin.15k\$ (3.2) - One contract with specialized firm or institute for: (i) design of training programme on minigrid finance for national banking sector; (ii) identification of microfinance opportunities addressing productive energy uses by women; and (iii) implementation of training activities (on-site, webinars). | | | 28,000 | 28,000 | | 28,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
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| Contractual services-Company | 25 k\$ (4.2) ? One contract with specialized firm for: (i) analysis of Digital Platform host's institutional context and business operations; (ii) assessment of existent digital infrastructure and systems; and (iii) drafting of recommendations and road map for implementation of AMP Digital Platform. | | | | 25,000 | 25,000 | | 25,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Contractual services-Company | 25k\$ (2.2) - One or more contracts with specialized firm for final engineering and installation works for envisioned minigrid pilots.26k\$ (2.3) - One or more contracts with national institutions or firms for community development and implementation of training and awareness raising activities including on business development, productive uses of electricity and renewable energies. | | 51,000 | | 51,000 | | | 51,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |

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| <p>Contractual services-Company</p> | <p>30k\$ (1.1) - One or more contracts with specialized consultancy firm or institution for drafting of pertinent regulation for minigrids and rural electrification in congruence with Electricity Law 2020.14k\$ (1.3) ? One or more contracts with specialized firm or institution for tailored capacity building (courses, events, workshops, online webinars etc.)15k\$ (1.4) ? One contract with specialized firm for drafting of technical standards proposals and recommendations.45k\$ (1.4) ? One contract with specialized consultancy firm to carry out in-depth technical analysis of components, installation quality and practices, functional design, technical specifications and material choices, operation and maintenance practices, compliance with specification and procedures</p> | <p>104,000</p> | | | | <p>104,000</p> | | <p>104,000</p> | <p>Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy)</p> |
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| International Consultants | 10k\$ (3.1) - One contract with international consultant (shortlisted by AMP) for advice on financial mechanism design and banking sector development. | | | | 10,000 | | | | 10,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| International Consultants | 11 k\$ (4.1) - One contract with international consultant (shortlisted by AMP) for advice on digital technologies and system integration. | | | | 11,000 | | | | 11,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| International Consultants | 16k\$ (2.3) - One contract with international consultant (shortlisted by AMP) for technical backstopping during the minigrid pilot. | | | 16,000 | | | | | 16,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |

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| International Consultants | 62k\$ (1.1: 10k\$ - 1.2: 42k\$ - 1.3: 5k\$ -1.4: 5k\$) - One or more contracts with international consultant (shortlisted by AMP) for (i) technical backstopping on policy and regulation; (ii) implementation DREI framework; and (iii) advice for technical standards process. | 62,000 | | | | 62,000 | | | 62,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
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| <p>International Consultants</p> | <p>9k\$ (5.1.1) - One international expert to support the IP during the Project's inception phase including: (i) detailing Project M&E Plan including indicators and milestones; (ii) update the first annual work plan (AWP) and procurement plan; and (iii) support IW preparation process. 15.588k\$ (5.1.2) - One independent international expert to conduct the Mid-Term Evaluation. 26k\$ (5.1.3) - One independent international expert to conduct the GEF Terminal Evaluation.</p> | | | | | | <p>-</p> | <p>50,589</p> | <p>50,589</p> <p>Direction G n rale des Ressources Energ tiques (DGRE - Ministry of Energy)</p> |
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| <p>Local Consultants</p> | <p>13k\$ (1.5) ? One national Social and Environmental Safeguards Expert for: (i) periodic supervision of ESMF implementation ; (ii) periodic SESP rescreening; and (iii) systematization of lessons learnt and recommendations for enhancement. 14k\$ (1.5) ? One national gender expert for: (i) periodic supervision of Gender Action Plan implementation ; and (ii) identification of issues and recommendations for enhancement.</p> | <p>27,000</p> | | | | <p>27,000</p> | | <p>27,000</p> | <p>Direction G n rale des Ressources Energ tiques (DGRE - Ministry of Energy)</p> |
| <p>Local Consultants</p> | <p>16k\$ (2.3) - One contract with international consultant (shortlisted by AMP) for technical backstopping during the minigrid pilot.</p> | <p>28,000</p> | | | | <p>28,000</p> | | <p>28,000</p> | <p>Direction G n rale des Ressources Energ tiques (DGRE - Ministry of Energy)</p> |

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| Local Consultants | 18k\$ (3.2) ? Once contract with national finance expert for: (i) analysis and recommendations to enhance access to finance for minigrad investors and end-users; (ii) engagement with national banking institutes; and (iii) participation in workshops and training events. | | | 18,000 | | 18,000 | | 18,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Local Consultants | 4k\$ (5.2: 2k\$; 5.3: 2k\$) ? Two local consultants for data collection and assistance during MTR and TE process. | | | | | - | 4,000 | 4,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Travel | 10 k\$ - Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (land travel, fuel, DSA). | | | | | - | 10,000 | 10,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |

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| Travel | 16 k\$ - Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (land travel, fuel, DSA). | | 16,000 | | | 16,000 | | 16,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Travel | 17k\$ - Mission costs (international travel and DSA) for international consultants. Costs of domestic travel (land travel, fuel, DSA). | 17,000 | | | | 17,000 | | 17,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Travel | 2k\$ - Costs of domestic travel (land travel, fuel, DSA) | | | | | - | 2,000 | 2,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Travel | 5k\$ - Costs of domestic travel (land travel, fuel, DSA). | | | 5,000 | | 5,000 | | 5,000 | Direction G n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |

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| Travel | 6k\$ - Mission costs (international travel and DSA) for participation in AMP Communities of Practice. Costs of domestic travel (land travel, fuel, DSA). | | | | | 6,000 | 6,000 | | 6,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 22k\$ - Professional services for annual auditing of project financial status, delivered outputs, and financial, asset and human resources management. | | | | | | | 22,000 | 22,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 15k\$ (4.4) ? One or more contracts with national publishing company for preparation of content (including video material) as input for AMP ?Insight Briefs?. | | | | | 15,000 | 15,000 | | 15,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 1k\$ - Miscellaneous expenses (communication costs, insurances, supplies). | | | | 1,000 | | 1,000 | | 1,000 | Direction G?n?ral e des Ressources Energ?tiques (DGRE - Ministry of Energy) |

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| Other Operating Costs | 2k\$ - Printing of technical design and studies; printing of communication leaflets and electronic media. | | 2,000 | | | 2,000 | | 2,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 5k\$ - Printing of policy and regulation proposals; AV material for presentation to stakeholders; printing of technical standard proposals documents. | 5,000 | | | | 5,000 | | 5,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 1k\$ - Miscellaneous expenses (communication costs, insurances, supplies). | | | 1,000.00 | | 1,000.00 | | 1,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| Other Operating Costs | 2k\$ - Miscellaneous expenses (communication costs, insurances, supplies). | | 2,000 | | 2,000 | 4,000 | | 4,000 | Direction G?n?rale des Ressources Energ?tiques (DGRE - Ministry of Energy) |
| | Project Total | 287,000 | 570,000 | 95,000 | 189,000 | 1,141,000 | 64,589 | 120,558 | 1,326,147 |

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit a finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).